

Memo

To: Rommel Pabalinas, El Dorado County

From: Daria Snider, Senior Biologist

Date: January 19, 2017

Subject: El Dorado Hills Memory Care Project Regulatory Needs

This memo has been prepared to summarize our assessment of the regulatory needs for the El Dorado Hills Memory Care Project (Project), based on the *Preliminary Grading and Drainage Plan* dated January 2017 (Grading Plan) (attached). The *Biological Resources Assessment* that was prepared for this site in May 2015, and the *Addendum* to that document dated April 8, 2016 are general in nature, and do not discuss specific project-related impacts. As such, the *Biological Resources Assessment* and *Addendum* are both still applicable to this project.

Streambed Alteration Agreement

The creek along the northern edge of the site and the channel at the southern end of the site exhibit bed and bank, and these features, along with their adjacent riparian vegetation, are within the jurisdiction of the California Department of Fish and Wildlife (CDFW). The Grading Plan indicates that no work will occur within the creek or channel (as verified by the USACE). However, the bottom of the fill slope shown on the Grading Plan comes to within approximately 7.5 feet of the southern edge of the creek, and encroaches into the adjacent riparian corridor by approximately 5 feet. Our understanding of the extent of CDFW jurisdiction is the top of the creek bank, or the extent of adjacent woody riparian vegetation, whichever extends the furthest. As the Project depicted on the Grading Plan shows encroachment into the riparian corridor, construction of the Project as shown would require a Streambed Alteration Agreement. If the Project was redesigned such that the toe of the slope was pulled back outside of the riparian corridor, then no impacts to the creek bank or adjacent woody riparian vegetation would occur, and as such, it is our opinion that the applicant would not need a Streambed Alteration Agreement based on CDFW's historic assertion of their jurisdiction. An exhibit showing the mapped extent of the riparian vegetation is attached; the area where the fill slope encroaches into the riparian vegetation is shown with red hatching.

Clean Water Act Sections 404 and 401

All of the creeks, channels, and wetlands shown on the Grading Plan are considered both Waters of the U.S. and Waters of the State, and any fill placed in those features would be subject to regulation by the USACE and the Regional Water Quality Control Board (RWQCB) under Sections 404 and 401 (respectively) of the Clean Water Act. The Grading Plan shows no direct impacts to any of these features, and as such, no permit would be required from either the USACE or the RWQCB.

Accidental deposition of fill material into Waters of the U.S. would be considered a violation of the Clean Water Act. We have provided some recommended Best Management Practices below for the applicant's

protection as work is proposed so close to several features; these should help avoid incidental violations during construction.

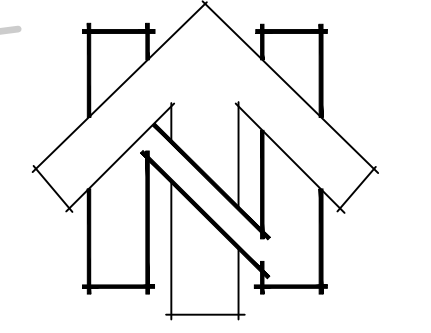
1. Silt barriers shall be installed along the creek in the north portion of the site where construction occurs within 20 feet to prevent soil and construction debris from entering the creek channel. All other Waters of the U.S. will be fenced with high-visibility fencing. The fencing should be at least 5 feet from the edge of the feature, where possible, and placed in a manner that would preclude encroachment of construction personnel and equipment into the Waters of the U.S. or the inadvertent discharge of soil or construction materials and debris into the Waters of the U.S. Best management erosion control practices, such as stabilizing all exposed/disturbed areas within the construction zone to the greatest extent possible, will be taken to minimize turbidity/siltation during construction and post-construction periods. Any non-biodegradable silt barriers utilized shall be removed after the disturbed areas have been stabilized with erosion control vegetation (usually after the first growing season). High visibility fencing may be removed when ground disturbance is complete.
2. All project-generated debris, construction materials, and rubbish will be removed from within 50 feet of the creek, where such materials could potentially be washed into the creek following construction activities.
3. Prepare a SWPPP that addresses operation, maintenance, refueling, and storage of equipment that is used in the vicinity of Waters of the U.S.; storage and disposal of materials away from Waters of the U.S.; and maintenance of spill clean-up materials on-site.

EL DORADO HILLS MEMORY CARE (PAVILIONS)

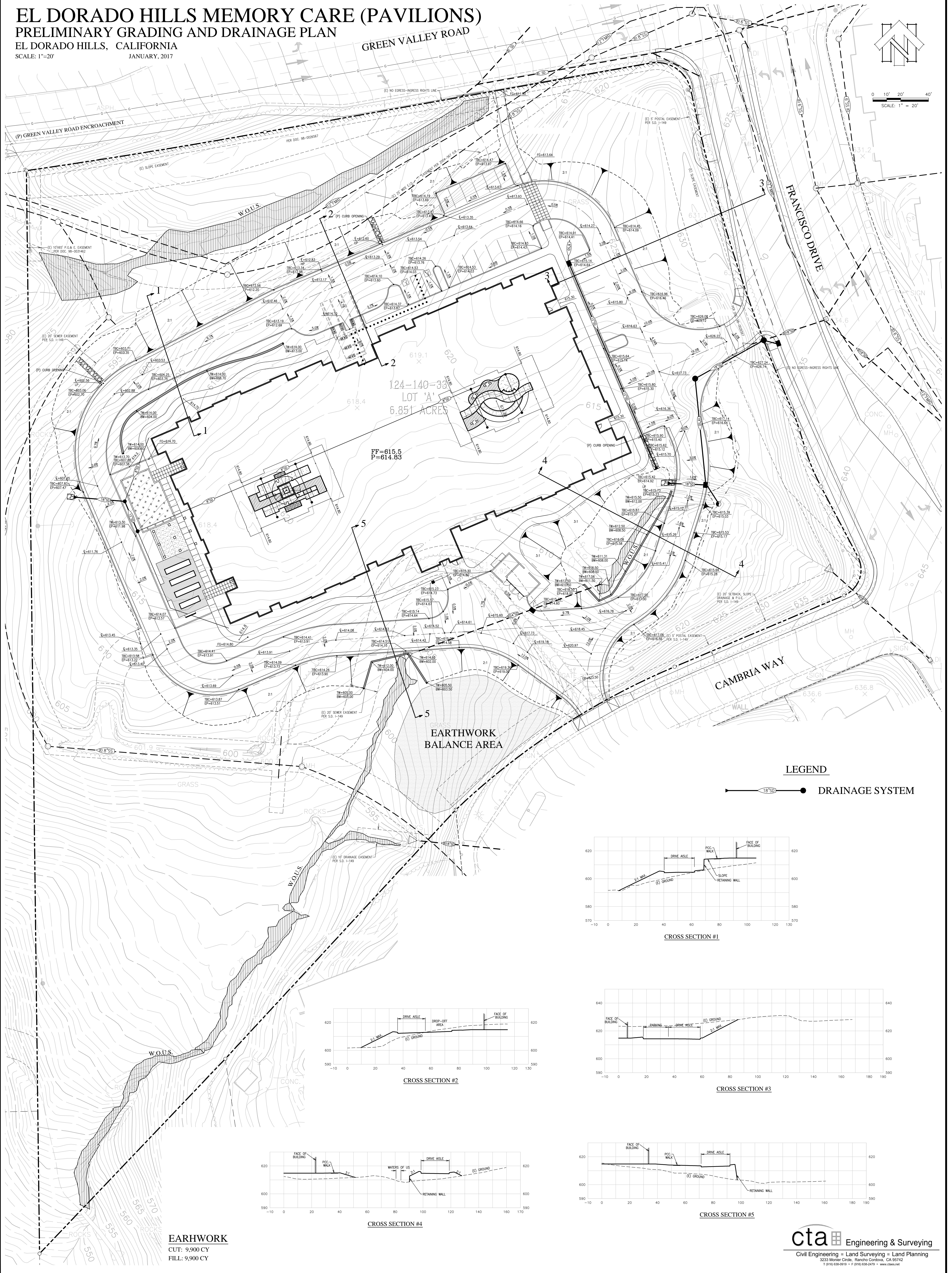
PRELIMINARY GRADING AND DRAINAGE PLAN

EL DORADO HILLS, CALIFORNIA
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JANUARY, 2017

GREEN VALLEY ROAD



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SCALE: 1" = 20'

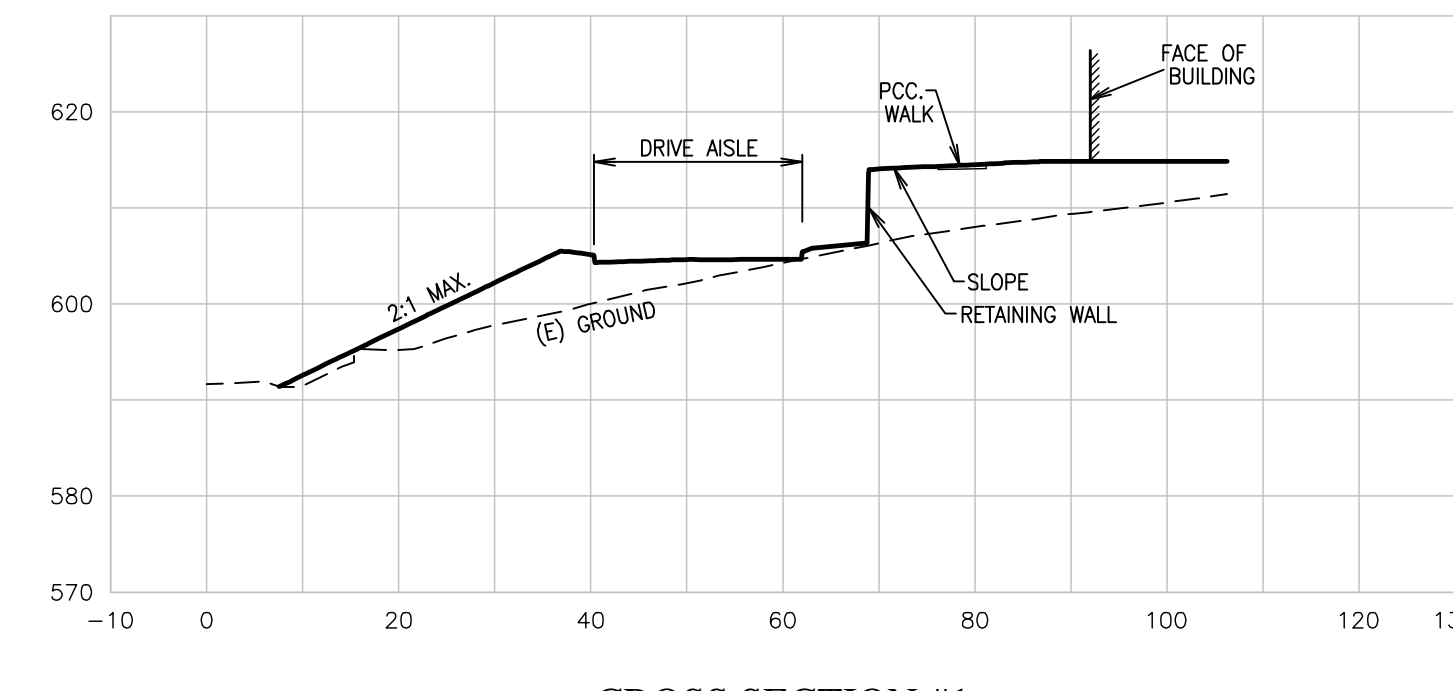


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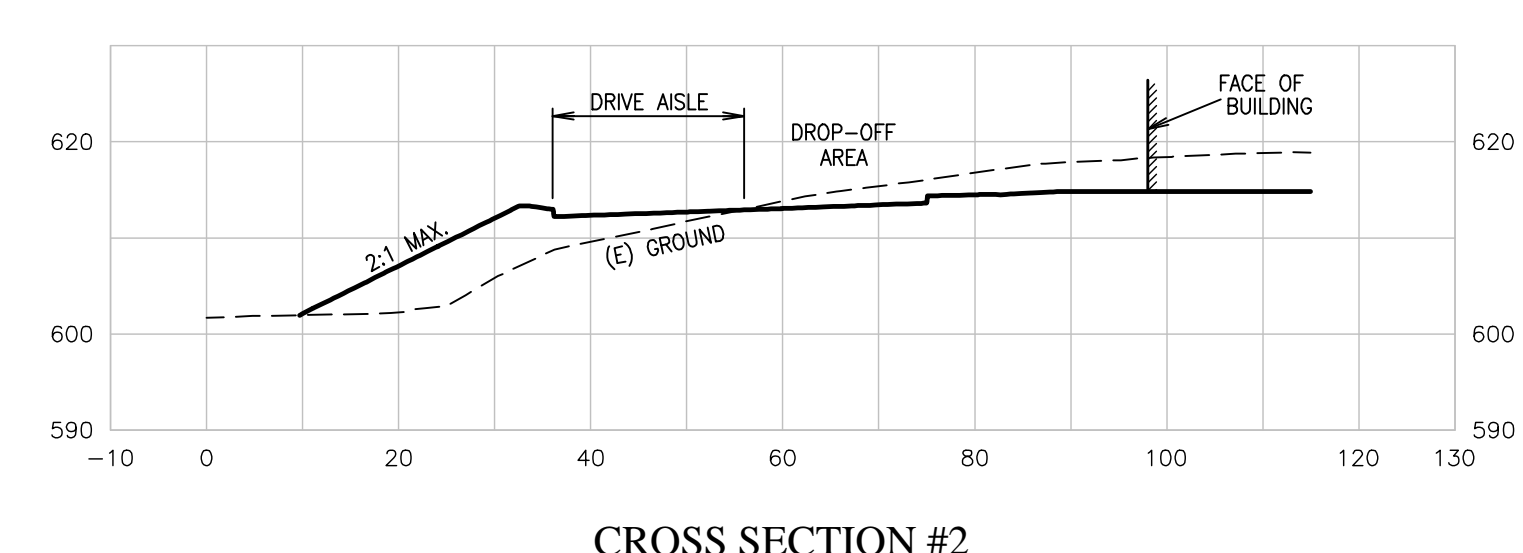
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LEGEND

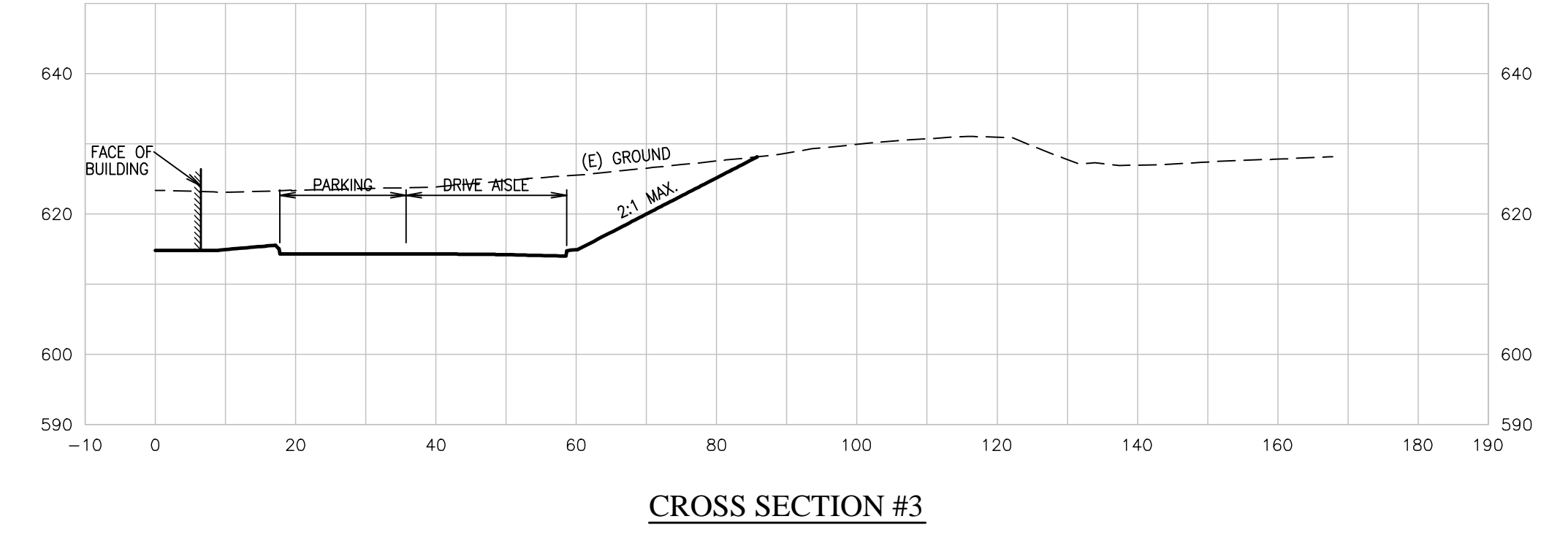
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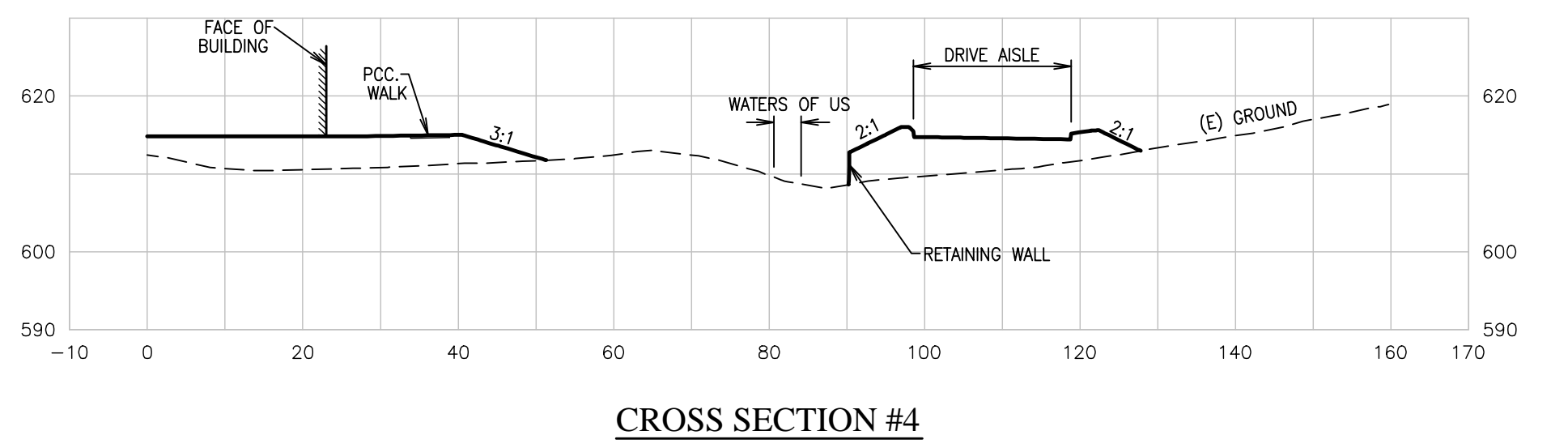
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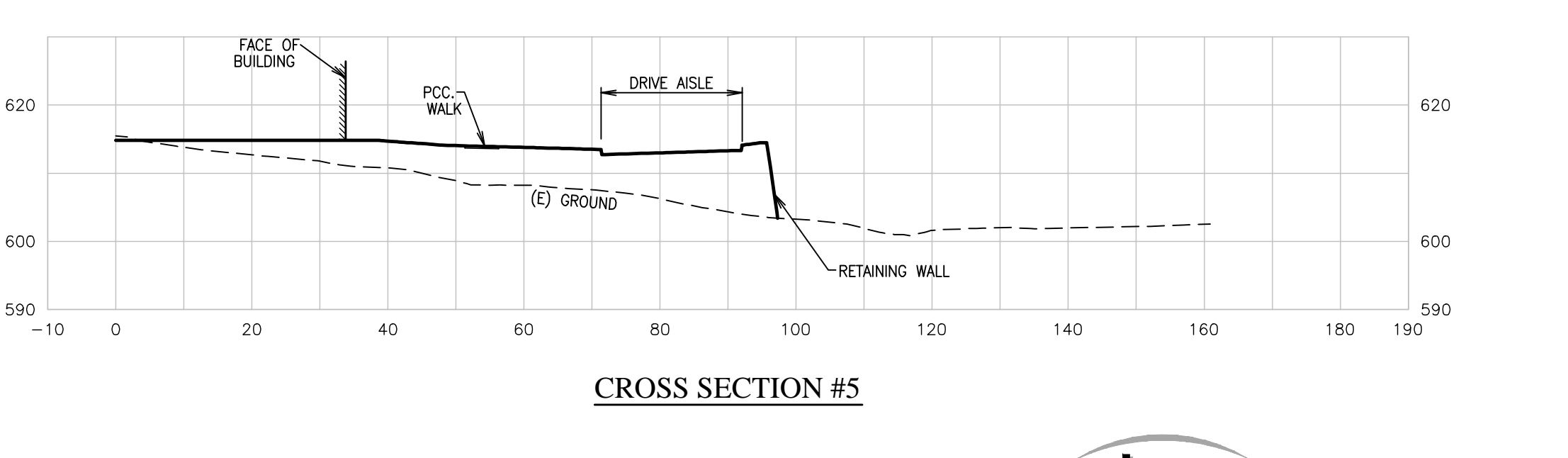
CROSS SECTION #2



CROSS SECTION #3



CROSS SECTION #4



CROSS SECTION #5

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Biological Resources Assessment
for the
El Dorado Hills Memory Care Project

El Dorado County, California

May 2015

Prepared For:

Winn Communities

Prepared By:



Gibson & Skordal, LLC
WETLAND CONSULTANTS

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Attachments:

- Attachment A: Preliminary Jurisdictional Determination
- Attachment B: List of Plant and Animal Species Documented in the CNDDDB within the “Clarksville, California” Quadrangle and 8 Surrounding Quadrangles
- Attachment C: IPaC Trust Resource Report for the El Dorado Hills Memory Care Site
- Attachment D: CNPS Inventory of Rare and Endangered Plants Query for the “Clarksville, California” Quadrangle and 8 Surrounding Quadrangles
- Attachment E: Target Plant Species Reference Population Information
- Attachment F: Plant Species Observed on the El Dorado Hills Memory Care Property

INTRODUCTION

This report presents the results of a biological resources assessment conducted for the approximately 7.1-acre El Dorado Hills Memory Care property. The project site is located in the southwest corner of the intersection of Green Valley Road and Francisco Drive in El Dorado Hills, California. The project site corresponds to a portion of Section 22, Township 10 North, Range 8 East, MDB&M of the “Clarksville, California” 7.5-Minute USGS Topographic Quadrangle (**Figure 1**).

GENERAL SITE CONDITIONS AND HABITAT

The project site is an undeveloped parcel bordered by existing roads and residential development to the north, east, and southeast, and oak woodland and grassland habitats to the west and southwest. Topography consists of rolling to steep terrain at an elevational range of approximately 560 feet to 640 feet above mean sea level.

The site is primarily occupied by a blue oak (*Quercus douglasii*) woodland and a riparian community borders a perennial creek that runs along the northern edge of the site. A seasonal wetland swale runs through the largely unvegetated eastern portion of the site, and becomes a defined channel in the southern portion of the site.

Herbicide has been applied to a majority of the site in order to comply with the El Dorado County Fire Protection District’s weed control requirements, and as a result, the majority of the site lacks herbaceous vegetation.

Vegetation Communities

The blue oak woodland is dominated by a canopy of blue oak and interior live oak (*Quercus wislizeni*) with occasional foothill pine (*Pinus sabiniana*). Valley oaks (*Quercus lobata*) and California buckeye (*Aesculus californica*) also occur along the lower terraces. As noted earlier, there is little to no herbaceous vegetation under the oaks, except north of the creek, and in the far southern corner. In these locations, the herbaceous layer is dominated by ripgut brome (*Bromus diandrus*), wild oat (*Avena fatua*), hedge parsley (*Torilis arvensis*), and winter vetch (*Vicia villosa*).

The riparian community is dominated by red willow (*Salix laevigata*) and Himalayan blackberry (*Rubus armeniacus*). Other species observed in this community on-site include Mexican fan palm (*Washingtonia robusta*), Fremont’s cottonwood (*Populus fremontii*), tall nutsedge (*Cyperus eragrostis*), Harding grass (*Phalaris aquatica*), spotted ladythumb (*Persicaria maculosa*), and watercress (*Nasturtium officinale*).

A small area north of the creek and south of Green Valley Road supports a stand of onion grass (*Melica californica*) and purple needle grass (*Stipa pulchra*) at approximately 20% cover. This area could be considered a purple needle grass grassland, which has been classified by the California Department of Fish and Wildlife as a Sensitive Natural Community.

Soils

The Natural Resources Conservation Service has mapped two soil units on the site (**Figure 2**); Auburn silt loam, 2 to 30 percent slopes and Auburn very rocky silt loam, 2 to 30 percent slopes (NRCS 2015). Both of these soils consist of well-drained soils underlain by metamorphic rocks, either serpentine or other amphibolite schist (metamorphosed gabbro). Neither of these soils is hydric, or contains listed hydric inclusions (NRCS 2015).

Waters of the U.S.

The study area was originally delineated by Gibson & Skordal, LLC (G&S) in 2004 and most recently verified by the U.S. Army Corps of Engineers in a Preliminary Jurisdictional Determination (PJD) issued on August 16, 2012 (Corps ID# 200700027) (Attachment A). Subsequent to issuance of the PJD, the creek along the northern boundary bypassed the culvert, and formed an additional channel. This additional channel was mapped by a G&S biologist and added to the wetland delineation map (Figure 3).

Waters of the U.S. on-site are comprised of the creek along the northern border (0.101 acre), a seasonal wetland swale along the eastern border (0.056 acre) and a defined channel (0.023 acre) in the southern portion of the site that is fed by the swale.

Vegetation in the creek along the northern boundary is described above under the riparian community description. The seasonal wetland swales on-site are almost exclusively unvegetated, likely due to application of herbicide to the site. Vegetation adjacent to the channel south of the seasonal wetland swale includes California dock (*Rumex californicus*), tall nutsedge, Goodding's willow (*Salix gooddingii*), and deer grass (*Muhlenbergia rigens*).

REGULATORY SETTING

This section describes federal, state and local laws and policies that are relevant to this assessment of biological resources.

Federal Regulations

Federal Endangered Species Act

The Federal Endangered Species Act (FESA) of 1973 protects species that are federally listed as endangered or threatened with extinction. FESA prohibits the unauthorized "take" of listed species. Take includes harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species or any attempt to engage in such activities. Harm includes significant modifications or degradations of habitats that may cause death or injury to protected species by impairing their behavioral patterns. Harassment includes disruption of normal behavior patterns that may result in injury to or mortality of protected species. Civil or criminal penalties can be levied against persons convicted of "take."

Clean Water Act, Section 404

Section 404 of the Federal Clean Water Act requires that a Department of the Army permit be issued prior to the discharge of any dredged or fill material into waters of the United States,

including wetlands. The U. S. Army Corps of Engineers (Corps) implements this program, with oversight from the U. S. Environmental Protection Agency. Waters of the United States include all navigable waters; interstate waters and wetlands; all intrastate waters and wetlands that could affect interstate or foreign commerce; impoundments of the above; tributaries of the above; territorial seas; and wetlands adjacent to the above.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) prohibits the take, possession, import, export, transport, selling, purchase, barter, or offering for sale, purchase or barter, any native migratory bird, their eggs, parts, and nests, except as authorized under a valid permit (50 CFR 21.11.). Likewise, Section 3513 of the California Fish & Game Code prohibits the “take or possession” of any migratory non-game bird identified under the MBTA. Therefore, activities that may result in the injury or mortality of native migratory birds, including eggs and nestlings, would be prohibited under the MBTA.

State Regulations

California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires evaluations of project effects on biological resources. Determining the significance of those effects is guided by Appendix G of the CEQA guidelines. These evaluations must consider direct effects on a biological resource within the project site itself, indirect effects on adjacent resources, and cumulative effects within a larger area or region. Effects can be locally important but not significant according to CEQA if they would not substantially affect the regional population of the biological resource. Significant adverse impacts on biological resources would include the following:

- Substantial adverse effects on any species identified as candidate, sensitive, or special-status in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife (CDFW) or the U.S. Fish and Wildlife Service (USFWS) (these effects could be either direct or via habitat modification);
- Substantial adverse impacts to species designated by the California Department of Fish and Game (2009) as Species of Special Concern;
- Substantial adverse effects on riparian habitat or other sensitive habitat identified in local or regional plans, policies, or regulations or by CDFW and USFWS;
- Substantial adverse effects on federally protected wetlands defined under Section 404 of the Clean Water Act (these effects include direct removal, filling, or hydrologic interruption of marshes, vernal pools, coastal wetlands, or other wetland types);
- Substantial interference with movements of native resident or migratory fish or wildlife species population, or with use of native wildlife nursery sites;
- Conflicts with local policies or ordinances protecting biological resources (e.g. tree preservation policies); and
- Conflict with provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or state habitat conservation plan.

State Endangered Species Act

With limited exceptions, the California Endangered Species Act (CESA) of 1984 protects state-designated endangered and threatened species in a way similar to FESA. For projects on private property (i.e. that for which a state agency is not a lead agency), CESA enables CDFW to authorize take of a listed species that is incidental to carrying out an otherwise lawful project that has been approved under CEQA (Fish & Game Code Section 2081).

Clean Water Act, Section 401

Section 401 of the Clean Water Act requires any applicant for a 404 permit in support of activities that may result in any discharge into waters of the United States to obtain a water quality certification with the Regional Water Quality Control Board (RWQCB). This program is meant to protect these waters and wetlands by ensuring that waste discharged into them meets state water quality standards. Because the water quality certification program is triggered by the need for a Section 404 permit (and both programs are a part of the Clean Water Act), the definition of waters of the United States under Section 401 is the same as that used by the Corps under Section 404.

California Water Code, Porter-Cologne Act

The Porter Cologne Act, from Division 7 of the California Water Code, requires any person discharging waste or proposing to discharge waste that could affect the quality of waters of the state to file a report of waste discharge (RWD) with the RWQCB. The RWQCB can waive the filing of a report, but once a report is filed, the RWQCB must either waive or adopt water discharge requirements (WDRs). “Waters of the state” are defined as any surface water or groundwater, including saline waters, within the boundaries of the state.

California Fish and Game Code, Section 1600 – Streambed and Lake Alteration

The CDFW is responsible for conserving, protecting, and managing California’s fish, wildlife, and native plant resources. To meet this responsibility, the Fish and Game Code, Section 1602, requires notification to CDFW of any proposed activity that may substantially modify a river, stream, or lake. Notification is required by any person, business, state or local government agency, or public utility that proposes an activity that will:

- substantially divert or obstruct the natural flow of any river, stream or lake;
- substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or
- deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

For the purposes of Section 1602, rivers, streams and lakes must flow at least intermittently through a bed or channel. If notification is required and CDFW believes the proposed activity is likely to result in adverse harm to the natural environment, it will require that the parties enter into a Lake or Streambed Alteration Agreement (LSAA).

California Fish and Game Code, Section 3503.5 - Raptor Nests

Section 3503.5 of the Fish and Game Code makes it unlawful to take, possess, or destroy hawks or owls, unless permitted to do so, or to destroy the nest or eggs of any hawk or owl.

Local Regulations

El Dorado County General Plan

The project is also subject to all applicable regulations within the El Dorado County General Plan. Specifically, the project must comply with policy 7.3.3.4 regarding setbacks from streams and wetland features, and policy 7.4.4.4 regarding oak canopy retention. Policy 7.3.3.4 requires a 100-foot setback from all perennial streams, rivers, and lakes and a 50-foot setback from intermittent streams and seasonal wetland habitats unless a justification can be made for a reduction in this setback. The Interim Guidelines for policy 7.4.4.4 stipulate specific oak canopy retention requirements. If oak impacts will exceed these retention requirements, a Biological Resources Study and Important Habitat Mitigation Program must be prepared for the project and submitted to the County for review and approval.

METHODOLOGY

Literature Review

A list of special-status species with potential to occur within the project site was developed by conducting a query of the following databases:

- California Natural Diversity Database (CNDDDB) (CNDDDB 2015) query of the “Clarksville, CA” USGS topo quadrangle, and the eight surrounding quadrangles (Attachment B);
- USFWS Information for Planning and Conservation (IPaC) (USFWS 2015) query for the project site (Attachment C);
- California Native Plant Society (CNPS) Rare and Endangered Plant Inventory (CNPS 2015) query of the “Clarksville, CA” USGS topo quadrangle, and the eight surrounding quadrangles (Attachment D); and
- Western Bat Working Group (WBWG) Species Matrix (WBWG 2015).

For the purposes of this Biological Resources Assessment, special-status species is defined as those species that are:

- listed as threatened or endangered, or proposed or candidates for listing by the USFWS;
- listed as threatened or endangered and candidates for listing by CDFW;
- identified as Fully Protected species or species of special concern by CDFW;
- identified as Medium or High priority species by the WBWG; and
- plant species considered to be rare, threatened, or endangered in California by the CNPS and CDFW [California Rare Plant Rank (CRPR) 1, 2, and 3]:
 - CRPR 1A: Plants presumed extinct.
 - CRPR 1B: Plants rare, threatened, or endangered in California and elsewhere.
 - CRPR 2A: Plants extirpated in California, but common elsewhere.
 - CRPR 2B: Plants rare, threatened, or endangered in California, but more common elsewhere.
 - CRPR 3: Plants about which the CNPS needs more information – a review list.

Field Surveys

Reconnaissance-Level Survey

G&S biologist Daria Snider conducted a reconnaissance level field survey of the site on April 8, 2015 to assess the presence of habitats within the study area necessary to support special-status species. Meandering transects were performed on foot throughout the study area, and the entire site was visually observed.

Special-Status Plant Survey

In addition, G&S biologist Daria Snider conducted a rare plant survey of the site on May 5, 2015 in accordance with the U.S. Fish and Wildlife Service's *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants* (USFWS 1996) and California Department of Fish and Wildlife's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009). The survey targeted CRPR 1, 2, and 3 species; however, if CRPR 4 species were observed during the survey, they were documented. The survey was floristic in nature, which means that all plant species observed on-site were identified to the taxonomic level necessary to determine rarity. The *Jepson Manual, Second Edition* (Baldwin, et al 2012) was used for taxonomic nomenclature. A list of reference populations of target plants visited is included in Attachment E, and a comprehensive list of all plant species observed on the site is included in Attachment F.

RESULTS

Table 1 provides a list of special-status species that were evaluated including their listing status, habitat associations, and their potential to occur in the study area. The following set of criteria has been used to determine each species' potential for occurrence on the site.

- Present: Species occurs on the site based on CNDDDB records, and/or was observed on the site during field surveys.
- High: The site is within the known range of the species and suitable habitat exists.
- Low: The site is within the known range of the species and there is marginal suitable habitat or the species was not observed during protocol-level surveys conducted on-site.
- No Habitat Present: The site does not contain suitable habitat for the species, or the site is outside the known range of the species.

Figure 4 is an exhibit displaying CNDDDB occurrences within ten miles of the study area. Below is a discussion for all special-status plant and animal species with potential to occur on the site.

Table 1. Special-Status Species with Potential to Occur on the El Dorado Hills Memory Care Site

Scientific Name (Common Name)	Federal Status	State Status	Habitat Requirements	Potential for Occurrence
Plants				
<i>Allium jepsonii</i> (Jepson's onion)	--	CRPR 1B.2	Prefers cismontane woodland or lower montane coniferous forests associated with serpentine soils or volcanic slopes.	Low. Suitable habitat is present, but this plant was not found during protocol surveys.
<i>Balsamorhiza macrolepis</i> (big-scale balsamroot)	--	CRPR 1B.2	Prefers chaparral, cismontane woodland, and valley and foothill grasslands often associated with serpentine soils.	Low. Suitable habitat is present, but this plant was not found during protocol surveys.
<i>Calystegia stebbinsii</i> (Stebbin's morning glory)	FE	CE, CRPR 1B.1	Openings in foothill chaparral associated with Gabbro soils of the Pine Hill formation.	No Habitat Present. Chaparral and Gabbro soils are not present on-site.
<i>Ceanothus roderickii</i> (Pine Hill ceanothus)	FE	CR, CRPR 1B.1	Foothill chaparral and cismontane woodland associated with Gabbro soils of the Pine Hill formation.	No Habitat Present. Gabbro soils are not present on-site.
<i>Chlorogalum grandiflorum</i> (Red Hills soaproot)	--	CRPR 1B.2	Foothill chaparral, cismontane woodland, and lower montane coniferous forest. Sometimes found in serpentine and Gabbro soils.	Low. Suitable habitat is present, but this plant was not found during protocol surveys.
<i>Crocانthemum suffrutescens</i> (Bisbee Peak rush rose)	--	CRPR 3.2	Burned or disturbed areas in chaparral, often on Gabbro or lone soils.	No Habitat Present. Chaparral is not present on-site.
<i>Downingia pusilla</i> (dwarf downingia)	--	CRPR 2B.2	Vernal pools and other depressional wetlands	No Habitat Present. No vernal pools or other depressional wetlands are present on-site.
<i>Erigeron miser</i> (Starved daisy)	--	CRPR 1B.3	Rocky areas in upper montane coniferous forest.	No Habitat Present. Outside of the geographic range of the species.
<i>Eryngium pinnatisectum</i> (Tuolumne button-celery)	--	CRPR 1B.2	Mesic areas in cismontane woodlands and lower montane coniferous forests, and vernal pools.	Low. Suitable habitat is present, but this plant was not found during protocol surveys.
<i>Fremontodendron decumbens</i> (Pine Hill flannelbush)	FE	CR, CRPR 1B.2	Foothill chaparral and cismontane woodland associated with rocky serpentine and Gabbro soils.	Low. Suitable habitat is present, but this plant was not found during protocol surveys.
<i>Galium californicum</i> ssp. <i>sierrae</i> (El Dorado bedstraw)	FE	CR, CRPR 1B.2	Foothill chaparral, cismontane woodland, and lower montane coniferous forest. Found on Gabbro soils.	No Habitat Present. Gabbro soils are not present on-site.

Scientific Name (Common Name)	Federal Status	State Status	Habitat Requirements	Potential for Occurrence
<i>Gratiola heterosepala</i> (Bogg's Lake hedge-hyssop)	--	CE, CRPR 1B.2	Vernal pools and margins of lakes/ponds	No Habitat Present. No vernal pools or other depressional wetlands are present on-site.
<i>Horkelia parryi</i> (Parry's horkelia)	--	CRPR 1B.2	Chapparal and cismontane woodland on lone Formation and limestone soils.	No Habitat Present. lone Formation and limestone soils are absent.
<i>Juncus leiospermus</i> var. <i>ahartii</i> (Ahart's dwarf rush)	--	CRPR 1B.2	Edges of vernal pool and other seasonally ponded feature	No Habitat Present. No vernal pools or other depressional wetlands are present on-site.
<i>Legenere limosa</i> (legenere)	--	CRPR 1B.1	Vernal pools	No Habitat Present. No vernal pools or other depressional wetlands are present on-site.
<i>Navarretia myersii</i> ssp. <i>myersii</i> (Pincushion navarretia)	--	CRPR 1B.1	Vernal pools	No Habitat Present. No vernal pools or other depressional wetlands are present on-site.
<i>Orcuttia tenuis</i> (slender Orcutt grass)	FT	CE, CRPR 1B.1	Vernal pools and other seasonally ponded features.	No Habitat Present. No vernal pools or other depressional wetlands are present on-site.
<i>Orcuttia viscida</i> (Sacramento Orcutt grass)	FE	CE, CRPR 1B.1	Vernal pools	No Habitat Present. No vernal pools or other depressional wetlands are present on-site.
<i>Packera layneae</i> (Layne's ragwort)	FT	CR, CRPR 1B.2	Foothill chaparral and cismontane woodland associated with rocky serpentine and Gabbro soils.	Low. Suitable habitat is present, but this plant was not found during protocol surveys.
<i>Sagittaria sanfordii</i> (Sanford's arrowhead)	--	CRPR 1B.2	Emergent marsh habitat, typically associated with drainages, canals, or irrigation ditches.	Low. Suitable habitat is present, but this plant was not found during protocol surveys.
<i>Wyethia reticulata</i> (El Dorado County mule ears)	--	CRPR 1B.2	Foothill chaparral, cismontane woodland, and lower montane coniferous forest. Found on Gabbro soils of the Pine Hill Formation.	No Habitat Present. Gabbro soils are not present on-site.
Invertebrates				
<i>Branchinecta lynchi</i> (vernal pool fairy shrimp)	FT	--	Vernal pools.	No Habitat Present. No vernal pools or other depressional wetlands are present on-site.

Scientific Name (Common Name)	Federal Status	State Status	Habitat Requirements	Potential for Occurrence
<i>Desmocerus californicus dimorphus</i> (Valley elderberry longhorn beetle)	FT	--	Dependent upon elderberry plant as primary host species.	No Habitat Present. No elderberry shrubs are present on-site.
<i>Lepidurus packardi</i> (vernal pool tadpole shrimp)	FE	--	Vernal pools.	No Habitat Present. No vernal pools or other depressional wetlands are present on-site.
Fish				
<i>Hypomesus transpacificus</i> (Delta smelt)	FT	CE	Adults are found in the brackish open surface waters of the Delta and Suisun Bay. Though spawning has never been observed, it is believed to occur in tidally influenced sloughs and drainages on the freshwater side of the mixing zone.	No Habitat Present. Outside of the geographic range of the species.
<i>Oncorhynchus mykiss irideus</i> (Central Valley steelhead)	FE	--	Anadromous species requiring freshwater water courses with gravelly substrates for breeding. The young remain in freshwater areas before migrating to estuarine and marine environments.	No Habitat Present. Upstream of Folsom Dam (migration barrier).
Amphibians & Reptiles				
<i>Ambystoma californiense</i> (California tiger salamander)	FT	CSC	Breeds in ponds or other deeply ponded wetlands, and uses gopher holes and ground squirrel burrows in adjacent grasslands for upland refugia/foraging.	No Habitat Present. No ponds are present, and outside of the geographic range of the species.
<i>Actinemys marmorata</i> (western pond turtle)	--	CSC	Ponds, rivers, streams, wetlands, and irrigation ditches with associated marsh habitat.	High. Suitable habitat for this species is present in the creek.
<i>Phrynosoma blainvillii</i> (coast horned lizard)	--	CSC	Diverse habitat associations, but normally a low land species associated with sandy scrub habitat.	No Habitat Present. Sandy soils are not present on-site.
<i>Rana boylei</i> (foothill yellow-legged frog)	--	CSC	Prefers gravelly or sandy streams with open banks near woodlands.	No Habitat Present. No open banks are present adjacent to the creek.
<i>Rana draytonii</i> (California red-legged frog)	FT	CSC	Breeds in permanent to semi-permanent aquatic habitats including lakes, ponds, marshes, creeks, and other drainages.	No Habitat Present. Outside of the geographic range of the species.
<i>Spea hammondi</i> (western spadefoot toad)	--	CSC	Breeds in vernal pools, seasonal wetlands and associated swales. Forages and hibernates in adjacent grasslands.	No Habitat Present. No vernal pools or other depressional wetlands are present on-site.

Scientific Name (Common Name)	Federal Status	State Status	Habitat Requirements	Potential for Occurrence
<i>Thamnophis gigas</i> (giant garter snake)	FT	CT	Rivers, canals, irrigation ditches, rice fields, and other aquatic habitats with slow moving water and heavy emergent vegetation.	No Habitat Present. Outside of the geographic range of the species.
Birds				
<i>Accipiter striatus</i> (sharp-shinned hawk)	--	CSC	Inhabits dense forest with a closed canopy; may forage in adjacent grassland and fields.	No Habitat Present. The canopy of the oak woodland is not sufficiently dense.
<i>Aquila chrysaetos</i> (golden eagle)	--	CFP	Forages in open areas including grasslands, savannahs, deserts, and early successional stages of shrub and forest communities. Nests in large trees and cliffs.	Low. The foothill pine trees on-site are marginally suitable for golden eagle nesting. Site is not open enough for foraging.
<i>Buteo swainsoni</i> (Swainson's hawk)	--	CT	Nests in large trees, preferably in riparian areas. Forages in fields, cropland, irrigated pasture, and grassland near large riparian corridors.	Low. Trees on-site are marginally suitable for nesting, and no suitable open areas for foraging are nearby.
<i>Elanus leucurus</i> (white-tailed kite)	--	CFP	Open grasslands, fields, and meadows are used for foraging. Isolated trees in close proximity to foraging habitat are used for perching and nesting.	No Habitat Present. Site is an oak woodland with no expansive open areas.
<i>Haliaeetus leucocephalus</i> (bald eagle)	FD	CE	Nest in large trees within 1 mile of lakes, rivers, or larger streams.	Low. The foothill pine trees on-site are marginally suitable for nesting.
<i>Falco peregrinus anatum</i> (American peregrine falcon)	FD	CFP	Nests on cliff ledges, tall buildings, or other tall man-made structures near open areas for foraging.	No Habitat Present. Suitable breeding habitat and foraging habitat are absent.
<i>Laterallus jamaicensis coturniculus</i> (California black rail)	--	CT	Nests and forages in salt, brackish, and fresh marshes with abundant vegetative cover.	No Habitat Present. Densely vegetated marshes are not present on-site.
<i>Charadrius alexandrinus</i> (snowy plover)	--	CSC	Barren to sparsely vegetated open areas near water.	No Habitat Present. Site is an oak woodland with no expansive open areas.
<i>Asio flammeus</i> (short-eared owl)	--	CSC	Typically found in open areas with few trees such as grasslands, prairies, dunes, meadows, and croplands.	No Habitat Present. Site is an oak woodland with no expansive open areas.

Scientific Name (Common Name)	Federal Status	State Status	Habitat Requirements	Potential for Occurrence
<i>Athene cunicularia</i> (burrowing owl)	--	CSC	Nests in abandoned ground squirrel burrows associated with open grassland habitats.	No Habitat Present. No ground squirrel burrows or open grassland habitats are present on-site.
<i>Lanius ludovicianus</i> (loggerhead shrike)	--	CSC	Occurs in open areas with sparse trees, shrubs, and other perches.	No Habitat Present. Site is an oak woodland with no expansive open areas.
<i>Eromophila alpestris actia</i> (California horned lark)	--	CSC	Forages and breeds in open grasslands and fields.	No Habitat Present. No open areas for foraging are present on-site.
<i>Progne subis</i> (purple martin)	--	CSC	Nest in tree cavities, bridges, utility poles, lava tubes, and buildings near open areas. Prefers conifer snags or other trees with minimal canopy.	No Habitat Present. Site is an oak woodland with no expansive open areas.
<i>Riparia riparia</i> (bank swallow)	--	CT	Colonial nester preferring vertical cliffs and banks associated with riparian zones along streams, rivers, and lakes.	No Habitat Present. Vertical cliffs and banks are not present on-site.
<i>Agelaius tricolor</i> (tricolored blackbird)	--	CSC	Colonial nester in cattails, bulrush, or blackberries associated with marsh habitats.	Low. Marginal nesting habitat is present in a large blackberry thicket on-site.
Mammals				
<i>Antrozous pallidus</i> (pallid bat)	--	CSC, WBWG H	Day and night roosts include crevices in rocky outcrops and cliffs, caves, mines, trees (e.g., basal hollows of coast redwoods and giant sequoias, bole cavities of oaks, exfoliating Ponderosa pine and valley oak bark, deciduous trees in riparian areas, and fruit trees in orchards), and various human structures such as bridges (especially wooden and concrete girder designs), barns, porches, bat boxes, and human-occupied as well as vacant buildings (WBWG 2015).	High. Suitable roosting habitat for this species is present in tree hollows and under exfoliating bark on trees throughout the site.
<i>Lasionycteris noctivagans</i> (silver-haired bat)	--	WBWG M	Roosts in abandoned woodpecker holes, under bark, and occasionally in rock crevices. It forages in open wooded areas near water features.	High. Suitable roosting habitat for this species is present in tree hollows and under exfoliating bark on trees throughout the site.

Scientific Name (Common Name)	Federal Status	State Status	Habitat Requirements	Potential for Occurrence
<i>Lasiurus blossevillii</i> (western red bat)	--	CSC, WBWG H	Require large leaf trees such as cottonwoods, willows, and fruit/nut trees for daytime roosts. Often associated with wooded habitats that are protected from above and open below. Often found in association with riparian corridors. Require open space for foraging.	High. Trees throughout the site represent suitable roosting habitat for this species.
<i>Lasiurus cinereus</i> (hoary bat)	--	WBWG M	Roosts primarily in foliage of both coniferous and deciduous trees at the edges of clearings (WBWG 2015).	High. Trees throughout the site represent suitable roosting habitat for this species.
<i>Pekania pennanti</i> (fisher - West Coast DPS)	FP	CC, CSC	Intermediate to large-tree stages of coniferous forest and deciduous-riparian areas with thicker canopies.	No Habitat Present. The oak woodland is too open and this site is too urban in nature for this elusive species.
<i>Taxidea taxus</i> (American badger)	--	CSC	This species prefers dry open fields, grasslands, and pastures.	No Habitat Present. No expansive open areas are present on-site.

Status Codes:

CC - CDFW Candidate for Listing
CE - CDFW Endangered
CFP - CDFW Fully Protected
CR - CDFW Rare
CRPR - California Rare Plant Rank

CSC - CDFW Species of Concern
CT - CDFW Threatened
FD - Federally Delisted
FE - Federally Endangered
FP - Proposed for Federal Listing

FT - Federally Threatened
WBWG M - Western Bat Working Group Medium Threat Rank
WBWG H - Western Bat Working Group High Threat Rank

Plants

Jepson's Onion

Jepson's onion (*Allium jepsonii*) is not federally or state listed, but it is classified as a CRPR List 1B.2 plant. It is a bulbiferous perennial herb that is usually associated with open areas within cismontane woodland or lower montane coniferous forest between 985 and 3,800 feet (CNPS 2015). Jepson's onion is typically found on serpentine soils of the Sierra Nevada, but it has been documented growing on volcanic soils (at Table Mountain) as well. It blooms between May and August.

Metamorphic soils within the oak woodlands throughout the site provide marginally suitable habitat for this species, but this species was not observed during the 2015 protocol-level special status plant survey of the site. Therefore, this species is presumed to be absent from the site.

Big-Scale Balsamroot

Big-scale balsamroot (*Balsamorhiza macrolepis* var. *macrolepis*) is not federally or state listed, but it is classified as a CRPR List 1B.2 plant. It is a perennial herbaceous species that favors chaparral, cismontane woodland and valley and foothill grasslands between 295 and 4,600 feet. Big-scale balsamroot blooms from March through June and may be found on serpentine soils, though it is known to grow on other soil types as well.

Metamorphic soils within the oak woodlands throughout the site provide marginally suitable habitat for this species, but this species was not observed during the 2015 protocol-level special status plant survey of the site. Therefore, this species is presumed to be absent from the site.

Red Hills Soaproot

Red Hills soaproot (*Chlorogalum grandiflorum*) is not federally or state listed, but it is classified as a CRPR List 1B.2 plant. Red Hills soaproot occurs in foothill chaparral, cismontane woodland, and lower montane coniferous forest with Gabbro, serpentine, and other soils. This perennial blooms from May to June and is found from approximately 800 to 3,300 feet.

Metamorphic soils within the oak woodlands throughout the site provide marginally suitable habitat for this species, but this species was not observed during the 2015 protocol-level special status plant survey of the site. Therefore, this species is presumed to be absent from the site.

Tuolumne Button-Celery

Tuolumne button-celery (*Eryngium pinnatisectum*) is not federally or state listed, but it is classified as a CRPR List 1B.2 plant. This species occurs in mesic areas in cismontane woodlands and coniferous forests, as well as vernal pools (CNPS 2015). Tuolumne button-celery blooms from May-August, and is found from approximately 300 feet to 3,000 feet above Mean Sea Level (CNPS 2015).

The seasonal wetland swales and areas adjacent to the creeks on-site provide suitable habitat for this species, but this species was not observed during 2015 protocol-level special status plant surveys of the site. Therefore, this species is presumed to be absent from the site.

Pine Hill Flannelbush

Pine Hill flannelbush (*Fremontodendron decumbens*) is listed as endangered under the federal Endangered Species Act, as a California rare species, and is classified as a CRPR List 1B.2 plant. Pine Hill flannelbush is a sprawling, low-growing shrub that is known from Pine Hill in El Dorado County and potentially from an isolated population in Nevada County. The species favors foothill chaparral and cismontane woodland with rocky Gabbro or serpentine soils. It blooms from April to June.

Metamorphic soils within the oak woodlands throughout the site provide marginally suitable habitat for this species, but this species was not observed during the 2015 protocol-level special status plant survey of the site. Therefore, this species is presumed to be absent from the site.

Layne's Ragwort

Layne's ragwort (*Packera layneae*) is listed as endangered under the federal Endangered Species Act, as a California rare species, and is classified as a CRPR List 1B.2 plant. Layne's ragwort is a non-woody perennial associated with open areas in chaparral and cismontane woodland. This member of the sunflower family blooms from April to June and grows on rocky Gabbro or serpentine soils. It is known from Pine Hill in El Dorado County, the Red Hills in Tuolumne County, and near Brownsville in Yuba County.

Metamorphic soils within the oak woodlands throughout the site provide marginally suitable habitat for this species, but this species was not observed during the 2015 protocol-level special status plant survey of the site. Therefore, this species is presumed to be absent from the site.

Sanford's Arrowhead

Sanford's arrowhead (*Sagittaria sanfordii*) is not federally or state listed, but it is classified as a CRPR List 1B.2 plant. It generally occurs in shallow freshwater habitats associated with drainages, canals, and larger ditches that sustain inundation and/or slow moving water into early summer. It is a perennial rhizomatous emergent species, and it blooms from May to October.

The creek in the northern portion of the site provides suitable habitat for this species, but this species was not observed during 2015 protocol-level special status plant surveys of the site. Therefore, this species is presumed to be absent from the site.

Reptiles

Western Pond Turtle

The western pond turtle (*Emys marmorata*) is not federally or state listed, but is a CDFW species of special concern. Its favored habitats include streams, large rivers and canals with slow-moving water, aquatic vegetation, and open basking sites. Although the turtles must live near water,

they can tolerate drought by burrowing into the muddy beds of dried drainages. This species feeds mainly on invertebrates such as insects and worms, but will also consume small fish, frogs, mammals and some plants. Western pond turtle predators include raccoons, coyotes, raptors, weasels, large fish, and bullfrogs. This species breeds from mid to late spring in adjacent open grasslands or sandy banks.

The creek in the northern portion of the site appears to provide perennial aquatic habitat. However, the small size and fast-moving nature of this drainage makes this habitat marginal. No turtles were observed during the field survey.

Birds

Golden Eagle

The golden eagle (*Aquila chrysaetos*) is not federally listed, but is a CDFW species of special concern and a fully protected species. It is a very large solitary tree nesting raptor which forages in large, expansive open areas. Though its natural densities are generally believed to be low, it once was relatively common to the open areas of California.

Several large grey pine trees on-site provide suitable nesting habitat for golden eagle; however, the lack of suitable foraging habitat on or near the site make it unlikely that golden eagle would utilize the site. No golden eagles or their nests were observed during the field survey.

Swainson's Hawk

Swainson's hawk (*Buteo swainsoni*) is a raptor species that is not federally listed, but is listed as threatened by the CDFW. Breeding pairs typically nest in tall trees associated with riparian corridors, and forage in grassland, irrigated pasture, and cropland with a high density of rodents. The Central Valley populations breed and nest in the late spring through early summer before migrating to Central and South America for the winter.

Several cottonwood trees along the creek in the northern portion of the site represent marginal nesting habitat for Swainson's hawk, but the lack of suitable foraging habitat on or near the site make it unlikely that Swainson's hawk would utilize the site. No Swainson's hawks or their nests were observed during the field survey.

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) is no longer federally listed, but is still listed as endangered by the CDFW. Bald eagles typically nest in large trees within one mile of large bodies of water including lakes, streams, or rivers. They prey on fish, waterfowl, squirrels, rabbits, and muskrats, though bald eagles have been observed feeding on carrion. They are solitary nesters and may be monogamous.

Several large grey pine trees on-site provide suitable nesting habitat for bald eagle, and Folsom Lake is less than one mile north of the site. A bald eagle nest has been documented in the CNDDB

approximately one mile west of the site. No bald eagles or their nests were observed during the field survey.

Tricolored Blackbird

Tricolored blackbirds (*Agelaius tricolor*) are not federally listed, but received emergency listing as endangered under the California endangered species act in December 2014. This emergency listing will expire in June 2015, unless it is renewed. In addition, tricolored blackbird is listed by CDFW as a species of special concern. They are colonial nesters preferring to nest in dense stands of cattails, bulrush, or blackberry thickets associated with perennial water.

A large blackberry thicket along the creek in the northern portion of the site represents marginal breeding habitat for this species. No tricolored blackbirds were observed during the field survey.

Mammals

Pallid Bat

Pallid bat (*Antrozous pallidus*) is not federally or state listed, but is considered a CDFW species of special concern, and is classified by the WBWG as a High priority species. It favors roosting sites in crevices in rock outcrops, caves, abandoned mines, and human-made structures such as barns, attics, hollow trees, and sheds. Though pallid bats are gregarious, they tend to group in smaller colonies of 10 to 100 individuals. It is a nocturnal hunter and captures prey in flight, but unlike most American bats, the species has been observed foraging for flightless insects, which it seizes after landing.

Suitable roosting habitat for this species is present in tree hollows and under exfoliating bark on trees throughout the site.

Silver-Haired Bat

Silver-haired bat (*Lasionycteris noctivagans*) is not federally or state listed, but is classified by the WBWG as a Medium priority species. Primarily considered a coastal and montane forest species, the silver-haired bat occurs in more xeric environments during winter and seasonal migrations. It roosts in abandoned woodpecker holes, under bark, and occasionally in rock crevices. This insectivore's favored foraging sites include open wooded areas near water features.

Suitable roosting habitat for this species is present in tree hollows and under exfoliating bark on trees throughout the site.

Western Red Bat

Western red bat (*Lasiurus blossevillii*) is not federally or state listed, but is considered a CDFW species of special concern, and is classified by the WBWG as a High priority species. Western red bat is typically solitary, roosting primarily in the foliage of trees or shrubs. Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. There may be an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores).

Trees within the oak woodland and the riparian corridor represent suitable roosting habitat for this species.

Hoary Bat

The hoary bat (*Lasiurus cinereus*) is not federally or state listed, but is classified by the WBWG as a Medium priority species. It is considered to be one of the most widespread of all American bats with a range extending from Canada to central Chile and Argentina as well as Hawaii. Hoary bats prefer older large leaf species such as cottonwoods, willows, and fruit or nut trees for daytime roosts. This species is primarily crepuscular or nocturnal and requires open areas to hunt its main prey item, moths. The hoary bat is considered a forest/woodland species, and in California they are often associated with undisturbed riparian or stream corridors.

Trees within the oak woodland and the riparian corridor represent suitable roosting habitat for this species.

CONCLUSIONS / RECOMMENDATIONS

Special-Status Species

There is a low potential for the following plant species to occur on the site:

- Jepson's onion,
- Big-scale balsamroot,
- Red Hills soaproot,
- Pine Hill flannelbush,
- Layne's ragwort, and
- Sanford's arrowhead.

However, protocol-level plant surveys were conducted in 2015, and none of these species or any other rare plant were detected. Therefore, it is not anticipated that rare plants occur on the Project site.

There is a high potential for western pond turtle to occur in the creek along the northern edge of the site. It is recommended that pre-construction western pond turtle surveys be conducted prior to any work within or adjacent to the creek.

There is a low potential for the following special-status birds to occur on the site:

- Golden eagle,
- Swainson's hawk,
- Bald eagle, and
- Tricolored blackbird.

In addition, all migratory birds are protected by the MBTA, as discussed above. Therefore, it is recommended that pre-construction nesting bird surveys be conducted on-site prior to any construction during the nesting season (end of February through end of August). In addition, we recommend that any tree removal necessary on the site be conducted outside of the breeding season.

There is a high potential for the following bat species to roost in the trees on-site:

- Pallid bat,
- Silver-haired bat,
- Western red bat, and
- Hoary Bat

It is recommended that pre-construction bat surveys be conducted on-site prior to tree removal.

Waters of the U.S.

A total of 0.125 acre of creek/channel and 0.056 acre of seasonal wetland swale occur within the Project site. If any impacts to any of these features are proposed, regulatory permits may be necessary as follows. For direct fill the following would be necessary:

- CWA Section 404 Permit from the U.S. Army Corps of Engineers
- CWA Section 401 Water Quality Certification from the Regional Water Quality Control Board
- Section 1600 Lake and Streambed Alteration Agreement (LSAA) from CDFW

If activities are proposed that would not result in fill being placed in any of these features, but would involve work that could affect the bed, bank, or adjacent riparian zone of any of the channels, a LSAA from CDFW would still be necessary.

REFERENCES

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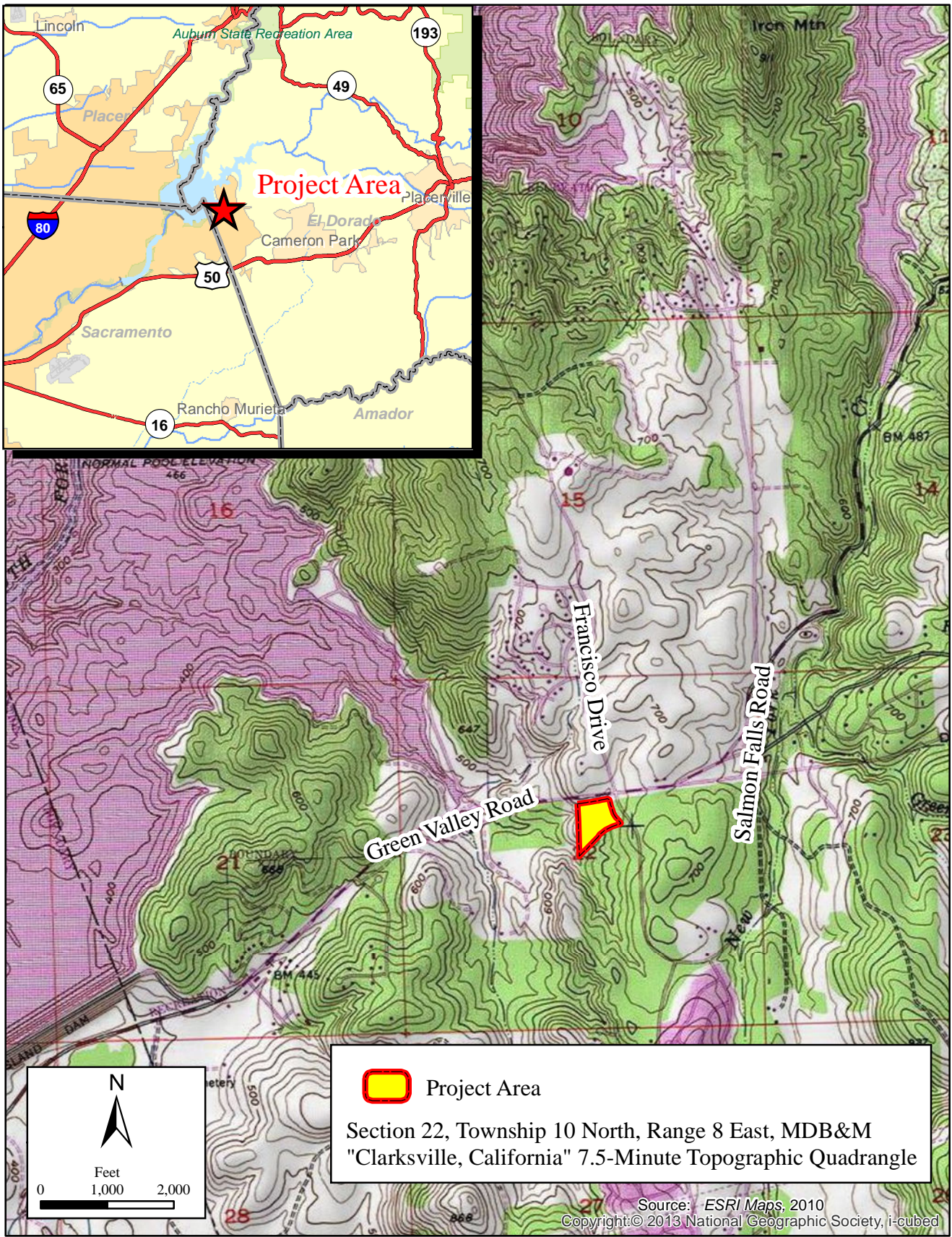
Figures

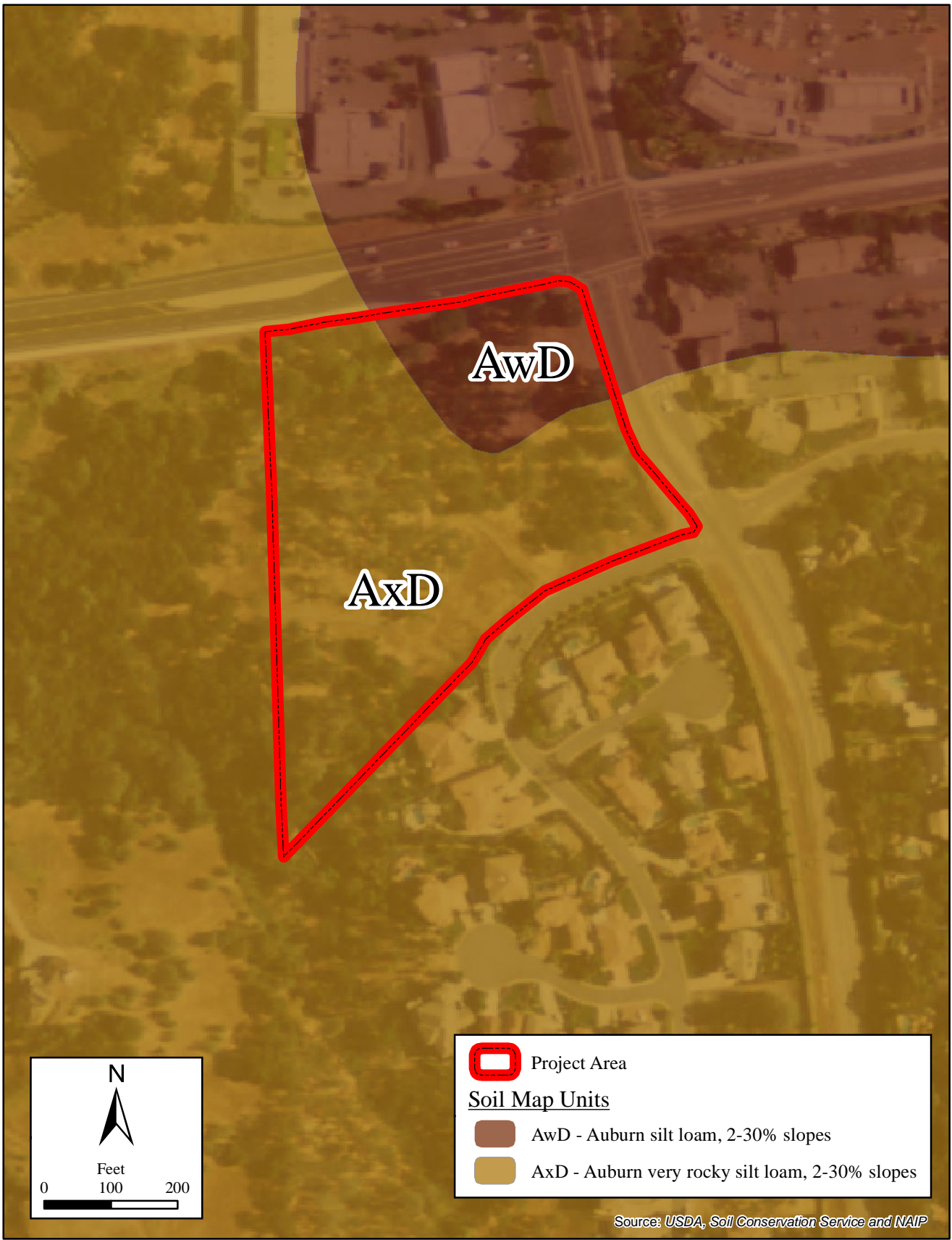
Figure 1: Vicinity Map

Figure 2: Soils Map

Figure 3: Wetland Delineation Map

Figure 4: California Natural Diversity Database Exhibit





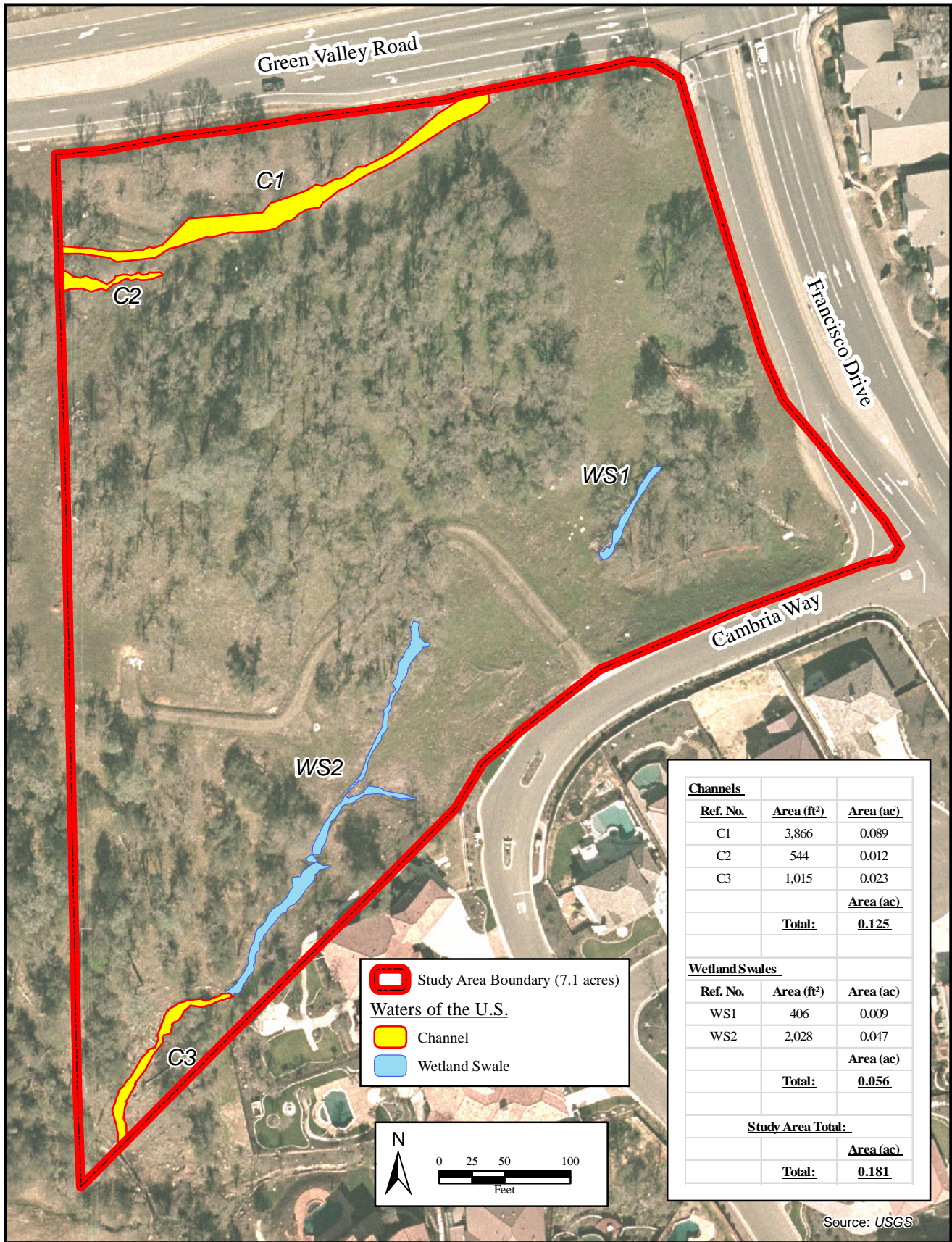
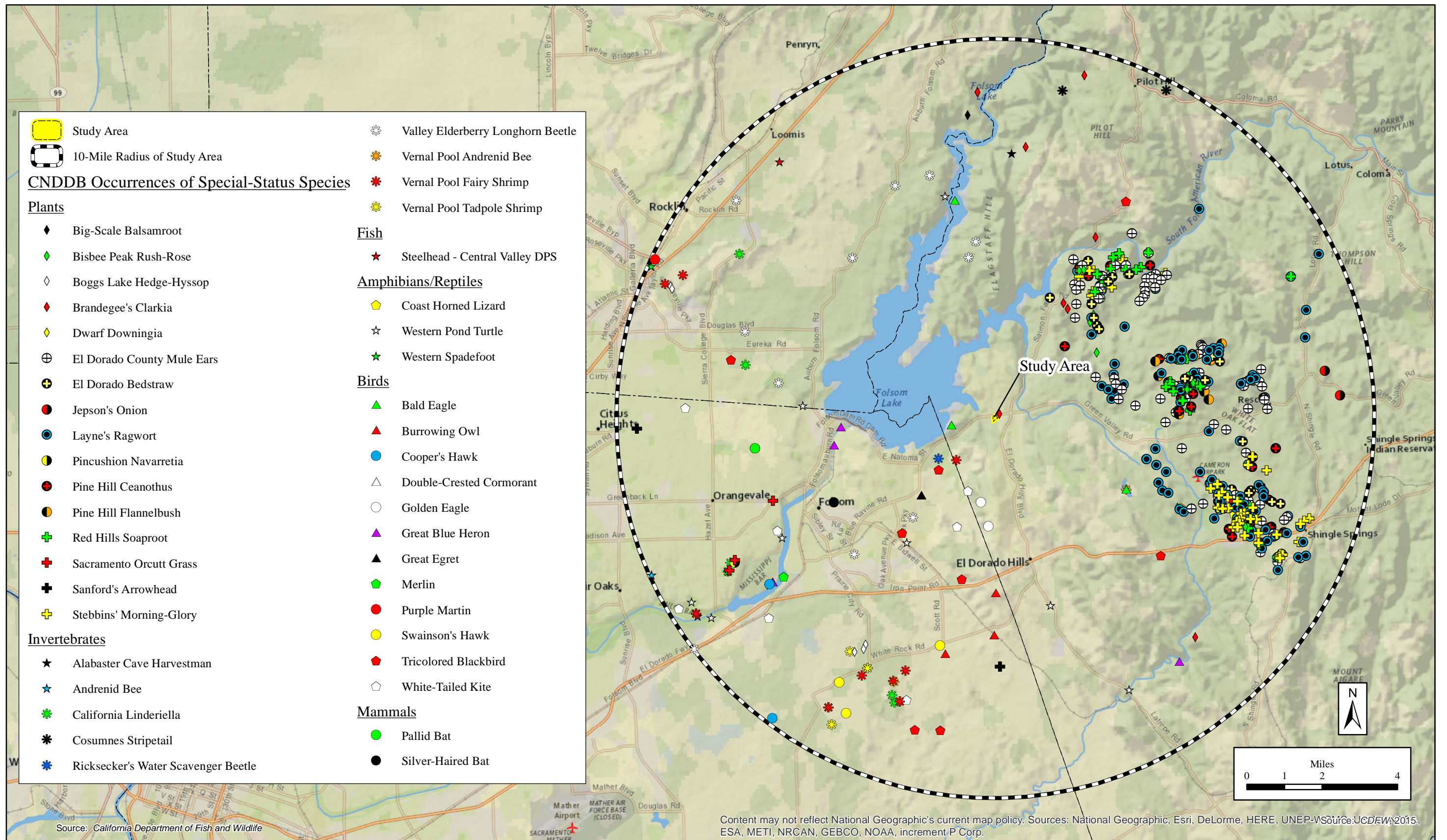


Figure 3
Wetland Delineation Map



Attachments

Attachment A: Preliminary Jurisdictional Determination

Attachment B: List of Plant and Animal Species Documented in the CNDDDB within the
"Clarksville, California" Quadrangle and 8 Surrounding Quadrangles

Attachment C: IPaC Trust Resource Report for the El Dorado Hills Memory Care Site

Attachment D: CNPS Inventory of Rare and Endangered Plants Query for the
"Clarksville, California" Quadrangle and 8 Surrounding Quadrangles

Attachment E: Target Plant Species Reference Population Information

Attachment F: Plant Species Observed on the El Dorado Hills Memory Care Property

Attachment A

Preliminary Jurisdictional Determination



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

August 16, 2012

Regulatory Division SPK-2007-00027

Mr. George Carpenter, Jr
Winn Communities
1130 Iron Point Road, Suite 150
Folsom, California 95630

Dear Mr. Carpenter, Jr:

We are responding to your August 8, 2012, request for a preliminary jurisdictional determination (JD), in accordance with our Regulatory Guidance Letter (RGL) 08-02, for the Green Valley Center (Winn Property) site. The approximately 6.8-acre site is located in Section 22, Township 10 North, Range 8 East, Mount Diablo Meridian, Latitude 38.7084401041089°, Longitude -121.086295751017°, Town of El Dorado Hills, El Dorado County, California.

Based on available information, **we concur with the amount and location of wetlands and/or other water bodies on the site as depicted on the enclosed August 2012, Jurisdictional Delineation Green Valley Center (Winn Parcel), El Dorado County, California, drawing prepared by Gibson and Skordal, LLC (enclosure 1).** The approximately 0.146 acre of wetlands and other water bodies present within the survey area are potential waters of the United States regulated under Section 404 of the Clean Water Act.

A copy of our RGL 08-02 Preliminary Jurisdictional Determination Form for this site is enclosed (enclosure 2). Please sign and return a copy of the completed form to this office. Once we receive a copy of the form with your signature we can accept and process a Pre-Construction Notification or permit application for your proposed project.

You should not start any work in potentially jurisdictional waters of the United States unless you have Department of the Army permit authorization for the activity. You may request an approved JD for this site at any time prior to starting work within waters. In certain circumstances, as described in RGL 08-02, an approved JD may later be necessary.

You should provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

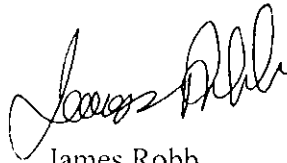
This preliminary determination has been conducted to identify the potential limits of wetlands and other water bodies which may be subject to Corps of Engineers' jurisdiction for the particular site identified in this request. A Notification of Appeal Process and Request for Appeal form is enclosed to notify you of your options with this determination (enclosure 3).

This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are U.S. Department of Agriculture (USDA) program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

We appreciate your feedback. At your earliest convenience, please tell us how we are doing by completing the customer survey on our website under *Customer Service Survey*.

Please refer to identification number SPK-2007-00027 in any correspondence concerning this project. If you have any questions, please contact Mr. Peck Ha at our California North Branch Office, Regulatory Division, Sacramento District, U.S. Army Corps of Engineers, 1325 J Street, Room 1350, Sacramento, California 95814-2922, email Peck.Ha@usace.army.mil, or telephone 916-557-6617. For more information regarding our program, please visit our website at www.spk.usace.army.mil/Missions/Regulatory.aspx.

Sincerely,



James Robb
Senior Project Manager,
California North Branch

Enclosures

Copy Furnished with enclosure 1:

Ms. Gina Paolini, El Dorado County Planning Department, 2850 Fairlane Court, Placerville,
California 95667-4103

Copy Furnished without enclosure:

Mr. James Gibson, Gibson and Skordal, LLC, 2617 K Street, Suite 175, Sacramento, California
95814

Attachment B

List of Plant and Animal Species Documented in the CNDDDB within the “Clarksville, California” Quadrangle and 8 Surrounding Quadrangles



Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad is (Clarksville (3812161) or Shingle Springs (3812068) or Rocklin (3812172) or Pilot Hill (3812171) or Coloma (3812078) or Folsom (3812162) or Folsom SE (3812151) or Buffalo Creek (3812152) or Latrobe (3812058))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Accipiter cooperii</i> Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
<i>Agelaius tricolor</i> tricolored blackbird	ABPBXB0020	None	Endangered	G2G3	S1S2	SSC
<i>Allium jepsonii</i> Jepson's onion	PMLIL022V0	None	None	G1	S1	1B.2
<i>Ammodramus savannarum</i> grasshopper sparrow	ABPBXA0020	None	None	G5	S3	SSC
<i>Andrena blennospermatis</i> Blennosperma vernal pool andrenid bee	IIHYM35030	None	None	G2	S2	
<i>Antrozous pallidus</i> pallid bat	AMACC10010	None	None	G5	S3	SSC
<i>Aquila chrysaetos</i> golden eagle	ABNKC22010	None	None	G5	S3	FP
<i>Ardea alba</i> great egret	ABNGA04040	None	None	G5	S4	
<i>Ardea herodias</i> great blue heron	ABNGA04010	None	None	G5	S4	
<i>Athene cunicularia</i> burrowing owl	ABNSB10010	None	None	G4	S3	SSC
<i>Balsamorhiza macrolepis</i> big-scale balsamroot	PDAST11061	None	None	G2	S2	1B.2
<i>Banksula californica</i> Alabaster Cave harvestman	ILARA14020	None	None	GH	SH	
<i>Branchinecta lynchi</i> vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S2S3	
<i>Branchinecta mesoovallensis</i> midvalley fairy shrimp	ICBRA03150	None	None	G2	S2	
<i>Buteo swainsoni</i> Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
<i>Calystegia stebbinsii</i> Stebbins' morning-glory	PDCON040H0	Endangered	Endangered	G1	S1	1B.1
<i>Ceanothus roderickii</i> Pine Hill ceanothus	PDRHA04190	Endangered	Rare	G1	S1	1B.2
<i>Central Valley Drainage Hardhead/Squawfish Stream</i> Central Valley Drainage Hardhead/Squawfish Stream	CARA2443CA	None	None	GNR	SNR	
<i>Chlorogalum grandiflorum</i> Red Hills soaproot	PMLIL0G020	None	None	G3	S3	1B.2



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Clarkia biloba ssp. brandegeae</i> Brandegee's clarkia	PDONA05053	None	None	G4G5T4	S4	4.2
<i>Cosumnoperla hypocreana</i> Cosumnes stripetail	IIPLE23020	None	None	G2	S2	
<i>Crocانthemum suffrutescens</i> Bisbee Peak rush-rose	PDCIS020F0	None	None	G2Q	S2	3.2
<i>Desmocerus californicus dimorphus</i> valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T2	S2	
<i>Downingia pusilla</i> dwarf downingia	PDCAM060C0	None	None	GU	S2	2B.2
<i>Dumontia oregonensis</i> hairy water flea	ICBRA23010	None	None	G1G3	S1	
<i>Elanus leucurus</i> white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
<i>Emys marmorata</i> western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
<i>Eryngium pinnatisectum</i> Tuolumne button-celery	PDAP10Z0P0	None	None	G2	S2	1B.2
<i>Falco columbarius</i> merlin	ABNKD06030	None	None	G5	S3S4	WL
<i>Fremontodendron decumbens</i> Pine Hill flannelbush	PDSTE03030	Endangered	Rare	G1	S1	1B.2
<i>Galium californicum ssp. sierrae</i> El Dorado bedstraw	PDRUB0N0E7	Endangered	Rare	G5T1	S1	1B.2
<i>Gratiola heterosepala</i> Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	G2	S2	1B.2
<i>Haliaeetus leucocephalus</i> bald eagle	ABNKC10010	Delisted	Endangered	G5	S2	FP
<i>Hydrochara rickseckeri</i> Ricksecker's water scavenger beetle	IICOL5V010	None	None	G2?	S2?	
<i>Juncus leiospermus var. ahartii</i> Ahart's dwarf rush	PMJUN011L1	None	None	G2T1	S1	1B.2
<i>Lasionycteris noctivagans</i> silver-haired bat	AMACC02010	None	None	G5	S3S4	
<i>Laterallus jamaicensis coturniculus</i> California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
<i>Legenere limosa</i> legenere	PDCAM0C010	None	None	G2	S2	1B.1
<i>Lepidurus packardi</i> vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G3	S2S3	
<i>Linderiella occidentalis</i> California linderiella	ICBRA06010	None	None	G2G3	S2S3	



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Navarretia myersii ssp. myersii</i> pincushion navarretia	PDPLM0C0X1	None	None	G1T1	S1	1B.1
Northern Hardpan Vernal Pool Northern Hardpan Vernal Pool	CTT44110CA	None	None	G3	S3.1	
Northern Volcanic Mud Flow Vernal Pool Northern Volcanic Mud Flow Vernal Pool	CTT44132CA	None	None	G1	S1.1	
<i>Oncorhynchus mykiss irideus</i> steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	
<i>Orcuttia tenuis</i> slender Orcutt grass	PMPOA4G050	Threatened	Endangered	G2	S2	1B.1
<i>Orcuttia viscida</i> Sacramento Orcutt grass	PMPOA4G070	Endangered	Endangered	G1	S1	1B.1
<i>Packera layneae</i> Layne's ragwort	PDAST8H1V0	Threatened	Rare	G2	S2	1B.2
<i>Pandion haliaetus</i> osprey	ABNKC01010	None	None	G5	S4	WL
<i>Pekania pennanti</i> fisher - West Coast DPS	AMAJF01021	Proposed Threatened	Candidate Threatened	G5T2T3Q	S2S3	SSC
<i>Phalacrocorax auritus</i> double-crested cormorant	ABNFD01020	None	None	G5	S4	WL
<i>Phrynosoma blainvillii</i> coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
<i>Progne subis</i> purple martin	ABPAU01010	None	None	G5	S3	SSC
<i>Rana boylei</i> foothill yellow-legged frog	AAABH01050	None	None	G3	S2S3	SSC
<i>Rana draytonii</i> California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
<i>Riparia riparia</i> bank swallow	ABPAU08010	None	Threatened	G5	S2	
<i>Sagittaria sanfordii</i> Sanford's arrowhead	PMALI040Q0	None	None	G3	S3	1B.2
<i>Spea hammondi</i> western spadefoot	AAABF02020	None	None	G3	S3	SSC
<i>Taxidea taxus</i> American badger	AMAJF04010	None	None	G5	S3	SSC
<i>Thamnophis gigas</i> giant garter snake	ARADB36150	Threatened	Threatened	G2	S2	
Valley Needlegrass Grassland Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	
<i>Wyethia reticulata</i> El Dorado County mule ears	PDAST9X0D0	None	None	G2	S2	1B.2

Record Count: 61

Attachment C

IPaC Trust Resource Report for the El Dorado Hills Memory Care Site

My project

IPaC Trust Resource Report

Generated May 06, 2015 12:10 PM MDT



US Fish & Wildlife Service

IPaC Trust Resource Report



Project Description

NAME

My project

PROJECT CODE

APBOQ-QQ4TZ-AGDL6-YPRPC-27ZOPQ

LOCATION

El Dorado County, California

DESCRIPTION

No description provided



U.S. Fish & Wildlife Contact Information

Species in this report are managed by:

Sacramento Fish And Wildlife Office

Federal Building

2800 COTTAGE WAY, ROOM W-2605

Sacramento, CA 95825-1846

(916) 414-6600

Endangered Species

Proposed, candidate, threatened, and endangered species that are managed by the [Endangered Species Program](#) and should be considered as part of an effect analysis for this project.

Amphibians

California Red-legged Frog

Threatened

DESCRIPTION

This subspecies of red-legged frog occurs from sea level to elevations of about 1,500 meters (5,200 feet). It has been extirpated from 70 percent of its former range and now is found primarily in coastal drainages of central California, from Marin County, California, south to northern Baja California, Mexico. Potential threats to the species include elimination or degradation of habitat from land development and land use activities and habitat invasion by non-native aquatic species.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=D02D>

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

California Tiger Salamander (sonoma) U.S.A. (CA - Sonoma County)

Endangered

DESCRIPTION

It is a large, stocky, terrestrial salamander with a broad, rounded snout. Adults males are about 8 inches long, females a little less than 7. Coloration consists of white or pale yellow spots or bars on a black background on the back and sides. The belly varies from almost uniform white or pale yellow to a variegated pattern of white or pale yellow and black. The salamander's small eyes protrude from their heads. They have black irises.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=D01T>

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

Crustaceans

Vernal Pool Fairy Shrimp

Threatened

DESCRIPTION

No description available

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=K03G>

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

Vernal Pool Tadpole Shrimp

Endangered

DESCRIPTION

No description available

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=K048>

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

Fishes

Delta Smelt

Threatened

DESCRIPTION

No description available

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?scode=E070>

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

Steelhead Northern California DPS - See 50 CFR 223.102

Threatened

DESCRIPTION

Steelhead trout (*Oncorhynchus mykiss*) belong to the family Salmonidae which includes all salmon, trout, and chars. Steelhead are similar to some Pacific salmon in their life cycle and ecological requirements. They are born in fresh water streams, where they spend their first 1-3 years of life. They then emigrate to the ocean where most of their growth occurs. After spending between one to four growing seasons in the ocean, steelhead return to their native fresh water stream to spawn. Unlike Pac...

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?scode=E08D>

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

Flowering Plants

El Dorado Bedstraw

Endangered

DESCRIPTION

No description available

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q0VG>

CRITICAL HABITAT

No critical habitat has been designated for this species.

Layne's Butterweed

Threatened

DESCRIPTION

No description available

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q1O2>

CRITICAL HABITAT

No critical habitat has been designated for this species.

Pine Hill Ceanothus

Endangered

DESCRIPTION

No description available

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q0DK>

CRITICAL HABITAT

No critical habitat has been designated for this species.

Pine Hill Flannelbush

Endangered

DESCRIPTION

No description available

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q0V1>

CRITICAL HABITAT

No critical habitat has been designated for this species.

Stebbins' Morning-glory

Endangered

DESCRIPTION

No description available

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q0AU>

CRITICAL HABITAT

No critical habitat has been designated for this species.

Insects

Valley Elderberry Longhorn Beetle

Threatened

DESCRIPTION

No description available

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=I01L>

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

Reptiles

Giant Garter Snake

Threatened

DESCRIPTION

Dorsal background coloration (the basic color on the snake's back) varies from brownish to olive with a checkered pattern of black spots, separated by a yellow dorsal stripe and two light colored lateral stripes. Background coloration and prominence of a black checkered pattern and the three light stripes are geographically and individually variable. The ventral surface (the snake's underside) is cream to olive or brown and sometimes infused with orange, especially in northern populations.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=C057>

CRITICAL HABITAT

No critical habitat has been designated for this species.

Critical Habitats

Potential effects to critical habitat(s) within the project area must be analyzed along with the endangered species themselves.

There is no critical habitat within this project area

Migratory Birds

Birds are protected by the [Migratory Bird Treaty Act](#) and the Bald and Golden Eagle Protection Act.

Any activity which results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service (1). There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

You are responsible for complying with the appropriate regulations for the protection of birds as part of this project. This involves analyzing potential impacts and implementing appropriate conservation measures for all project activities.

Bald Eagle

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Year-round

DESCRIPTION

A large raptor, the bald eagle has a wingspread of about 7 feet. Adults have a dark brown body and wings, white head and tail, and a yellow beak. Juveniles are mostly brown with white mottling on the body, tail, and undersides of wings. Adult plumage usually is obtained by the 6th year. In flight, the bald eagle often soars or glides with the wings held at a right angle to the body.

Black Rail

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Breeding

DESCRIPTION

No description available

Burrowing Owl

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Year-round

DESCRIPTION

No description available

Calliope Hummingbird

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Breeding

DESCRIPTION

No description available

Costa's Hummingbird

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Breeding

DESCRIPTION

No description available

Flammulated Owl

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Breeding

DESCRIPTION

No description available

Fox Sparrow

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Year-round

DESCRIPTION

No description available

Green-tailed Towhee

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Breeding

DESCRIPTION

No description available

Lewis's Woodpecker

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Wintering

DESCRIPTION

No description available

Loggerhead Shrike

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Year-round

DESCRIPTION

No description available

Nuttall's Woodpecker

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Year-round

DESCRIPTION

No description available

Oak Titmouse

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Year-round

DESCRIPTION

No description available

Peregrine Falcon

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Wintering

DESCRIPTION

No description available

Short-eared Owl

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Wintering

DESCRIPTION

The short-eared owl is an owl of about 0.7 to 0.8 lbs with females slightly larger in size than males. Plumage is brown, buff, white and rust colors. Patches of brown and buff occur mostly on the back side, while the underside is colored more lightly, being mostly white. Females and males have similar plumage. Some distinguishing characteristics of this owl are its gray white fascial disk, and black coloring around yellow eyes. Juveniles have similar plumage to adults, but upper parts and head a...

Snowy Plover

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Breeding

DESCRIPTION

No description available

Tricolored Blackbird

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Year-round

DESCRIPTION

The Tricolored Blackbird is a medium-sized (18-24cm total length), sexually dimorphic North American passerine (Beedy, Edward, and Hamilton III 1999). Adult males are typically larger than females, and are black with bright red and white plumage on the wing shoulder. Adult females have sooty brown-black plumage with distinct grayish streaks, a relatively white chin and throat, and a smaller reddish shoulder-patch. Banding studies indicate a lifespan of 12-13 years (DeHaven and Neff 1973, Kenn...

White Headed Woodpecker

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Year-round

DESCRIPTION

No description available

Williamson's Sapsucker

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Year-round

DESCRIPTION

No description available

Yellow-billed Magpie

This is a **bird of conservation concern** and has the highest priority for conservation

SEASON

Year-round

DESCRIPTION

No description available

Refuges

Any activity proposed on [National Wildlife Refuge](#) lands must undergo a 'Compatibility Determination' conducted by the Refuge. If your project overlaps or otherwise impacts a Refuge, please contact that Refuge to discuss the authorization process.

There are no refuges within this project area

Wetlands

Impacts to [NWI wetlands](#) and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes.

Project proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate [U.S. Army Corps of Engineers District](#).

DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

There are no wetlands identified in this project area

Attachment D

CNPS Inventory of Rare and Endangered Plants Query for the "Clarksville, California"
Quadrangle and 8 Surrounding Quadrangles

CNPS *California Native Plant* Rare and Endangered Plant Inventory

Plant List

29 matches found. *Click on scientific name for details*

Search Criteria

Found in 9 Quads around 38121F1

Scientific Name	Common Name	Family	Lifeform	Rare Plant Rank	State Rank	Global Rank
Allium jepsonii	Jepson's onion	Alliaceae	perennial bulbiferous herb	1B.2	S1	G1
Allium sanbornii var. sanbornii	Sanborn's onion	Alliaceae	perennial bulbiferous herb	4.2	S4?	G3T4?
Balsamorhiza macrolepis	big-scale balsamroot	Asteraceae	perennial herb	1B.2	S2	G2
Calandrinia breweri	Brewer's calandrinia	Montiaceae	annual herb	4.2	S34	G4
Calystegia stebbinsii	Stebbins' morning-glory	Convolvulaceae	perennial rhizomatous herb	1B.1	S1	G1
Ceanothus fresnensis	Fresno ceanothus	Rhamnaceae	perennial evergreen shrub	4.3	S4	G4
Ceanothus roderickii	Pine Hill ceanothus	Rhamnaceae	perennial evergreen shrub	1B.1	S1	G1
Chlorogalum grandiflorum	Red Hills soaproot	Agavaceae	perennial bulbiferous herb	1B.2	S3	G3
Clarkia biloba ssp. brandegeae	Brandegee's clarkia	Onagraceae	annual herb	4.2	S4	G4G5T4
Claytonia parviflora ssp. grandiflora	streambank spring beauty	Montiaceae	annual herb	4.2	S3	G5T3
Crocanthemum suffrutescens	Bisbee Peak rush-rose	Cistaceae	perennial evergreen shrub	3.2	S2	G2Q
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	2B.2	S2	GU
Erigeron miser	starved daisy	Asteraceae	perennial herb	1B.3	S2	G2
Eriophyllum jepsonii	Jepson's woolly sunflower	Asteraceae	perennial herb	4.3	S3	G3
Eryngium pinnatisectum	Tuolumne button-celery	Apiaceae	annual / perennial herb	1B.2	S2	G2
Fremontodendron decumbens	Pine Hill flannelbush	Malvaceae	perennial evergreen shrub	1B.2	S1	G1
Galium californicum ssp. sierrae	El Dorado bedstraw	Rubiaceae	perennial herb	1B.2	S1	G5T1
Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	annual herb	1B.2	S2	G2
Horkelia parryi	Parry's horkelia	Rosaceae	perennial herb	1B.2	S2	G2
Juncus leiospermus var. ahartii	Ahart's dwarf rush	Juncaceae	annual herb	1B.2	S1	G2T1

Legenere limosa	legenere	Campanulaceae	annual herb	1B.1	S2	G2
Lilium humboldtii ssp. humboldtii	Humboldt lily	Liliaceae	perennial bulbiferous herb	4.2	S3	G4T3
Navarretia myersii ssp. myersii	pincushion navarretia	Polemoniaceae	annual herb	1B.1	S1	G1T1
Orcuttia tenuis	slender Orcutt grass	Poaceae	annual herb	1B.1	S2	G2
Orcuttia viscida	Sacramento Orcutt grass	Poaceae	annual herb	1B.1	S1	G1
Packera layneae	Layne's ragwort	Asteraceae	perennial herb	1B.2	S2	G2
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb	1B.2	S3	G3
Trichostema rubisepalum	Hernandez bluecurls	Lamiaceae	annual herb	4.3	S4	G4
Wyethia reticulata	El Dorado County mule ears	Asteraceae	perennial herb	1B.2	S2	G2

Suggested Citation

CNPS, Rare Plant Program. 2015. Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society, Sacramento, CA. Website <http://www.rareplants.cnps.org> [accessed 13 May 2015].

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Contributors

[The Calflora Database](#)

[The California Lichen Society](#)

Attachment E

Target Plant Species Reference Population Information

Target Plant Species Reference Population Information
for the El Dorado Hills Memory Care Site

Plant Species	Location of Reference Population	Date of Visit	Phenology of Reference Population/ Distinctive Characteristics
<i>Allium jepsonii</i> (Jepson's onion)	Herbarium specimen at UC Davis Center for Plant Diversity	March 30, 2015	Pressed specimen. Plant is very tall, one leaf per plant, deep pink midveins on petals, jagged inner perianth parts.
<i>Balsamorhiza macrolepis</i> (big-scale balsamroot)	Herbarium specimen at UC Davis Center for Plant Diversity	March 30, 2015	Pressed specimen. Similar to <i>Wyethia</i> , but with grey, dissected leaves. Leaves are mostly basal (as opposed to <i>Wyethia</i> , which has basal and cauline leaves).
<i>Chlorogalum grandiflorum</i> (Red Hills soaproot)	Pine Hill Unit of the Pine Hill Preserve, El Dorado County	May 5, 2015	Population entirely vegetative. Plants are small (approximately 8" -16" diameter), with wavy-edged leaves. Inflorescence would be necessary for definitive key if small, wavy-leaf <i>Chlorogalum</i> rosettes are found on a site.
<i>Fremontodendron decumbens</i> (Pine Hill flannelbush)	Pine Hill Unit of the Pine Hill Preserve, El Dorado County	May 5, 2015	Several large shrubs were observed in full bloom. Distinctive orange-red blossoms and felty palmate leaves. All aspects of the plant are smaller than <i>F. californicum</i> , the only species with which it could be confused.
<i>Packera layneae</i> (Layne's ragwort)	Pine Hill Unit of the Pine Hill Preserve, El Dorado County	May 5, 2015	Many plants observed, all in full bloom. Plants are tall, with numerous basal leaves, plus cauline leaves. Flower heads are relatively large, and each have a few (3-8) ligules.
<i>Sagittaria sanfordii</i> (Sanford's arrowhead)	Antelope Station Park, Roseville	May 12, 2015	Population was recently mowed, but plants are healthy and resprouting. Some leaves have resprouted and were exhibiting the characteristic triangular pedicel of this species.

Attachment F

Plant Species Observed on the El Dorado Hills Memory Care Property

Plant Species Observed on the El Dorado Hills Memory Care Property
May 5, 2015

Family/Species Name	Common Name	Native/Non-Native
AGAVACEAE		
<i>Chlorogalum angustifolium</i>	Narrow-leaf soapplant	Native
<i>Chlorogalum pomeridianum</i>	Soapplant	Native
ANACARDIACEAE		
<i>Toxicodendron diversilobum</i>	Western Poison Oak	Native
APIACEAE		
<i>Anthriscus caucalis</i>	Bur-Chervil	Non-Native
<i>Daucus pusillus</i>	Carrot	Native
<i>Sanicula bipinnatifida</i>	Purple Sanicle	Native
<i>Torilis arvensis</i>	Tall Sock-Destroyer	Non-Native
<i>Torilis nodosa</i>	Short Sock-Destroyer	Non-Native
ARECACEAE		
<i>Washingtonia robusta</i>	Mexican Fan Palm	Non-Native
ASTERACEAE		
<i>Baccharis pilularis</i>	Coyote Brush	Native
<i>Carduus pycnocephalus</i> subsp. <i>pycnocephalus</i>	Italian Thistle	Non-Native
<i>Centaurea solstitialis</i>	Yellow Star-Thistle	Non-Native
<i>Chondrilla juncea</i>	Skeleton Weed	Non-Native
<i>Hypochaeris glabra</i>	Smooth Cat's-Ear	Non-Native
<i>Lactuca serriola</i>	Prickly Lettuce	Non-Native
<i>Leontodon saxatilis</i>	Hairy Hawkbit	Non-Native
<i>Logfia gallica</i>	Daggerleaf Cottonrose	Non-Native
<i>Micropus californicus</i>	Q-Tips	Native
<i>Pseudognaphalium luteoalbum</i>	Marsh Cudweed	Non-Native
<i>Senecio vulgaris</i>	Common Groundsel	Non-Native
<i>Sonchus oleraceus</i>	Common Sow Thistle	Non-Native
BETULACEAE		
<i>Alnus rhombifolia</i>	White Alder	Native
BIGNONIACEAE		
<i>Catalpa bignonioides</i>	Cigar Tree	Non-Native

Plant Species Observed on the El Dorado Hills Memory Care Property
May 5, 2015

Family/Species Name	Common Name	Native/Non-Native
BORAGINACEAE		
<i>Amsinckia menziesii</i>	Small-Flowered Fiddleneck	Native
BRASSICACEAE		
<i>Hirschfeldia incana</i>	Short-pod Mustard	Non-Native
<i>Nasturtium officinale</i>	Water Cress	Native
<i>Raphanus sativus</i>	Radish	Non-Native
CAPRIFOLIACEAE		
<i>Lonicera interrupta</i>	Honeysuckle	Native
CYPERACEAE		
<i>Cyperus eragrostis</i>	Tall Nutsedge	Native
EUPHORBIACEAE		
<i>Croton setiger</i>	Turkey Mullein	Native
<i>Triadica sebifera</i>	Chinese Tallowtree	Non-Native
FABACEAE		
<i>Acmispon americanus</i> var. <i>americanus</i>	Spanish Lotus	Native
<i>Lupinus bicolor</i>	Miniature Lupine	Native
<i>Medicago polymorpha</i>	California Burclover	Non-Native
<i>Trifolium hirtum</i>	Rose Clover	Non-Native
<i>Vicia sativa</i>	Spring Vetch	Non-Native
<i>Vicia villosa</i>	Winter Vetch	Non-Native
FAGACEAE		
<i>Quercus douglasii</i>	Blue Oak	Native
<i>Quercus lobata</i>	Valley Oak	Native
<i>Quercus wislizeni</i> var. <i>wislizeni</i>	Interior Live Oak	Native
GERANIACEAE		
<i>Erodium botrys</i>	Redstem Filaree	Non-Native
<i>Erodium cicutarium</i>	Cut-leaf Filaree	Non-Native
<i>Geranium dissectum</i>	Cut-leaf Geranium	Non-Native
<i>Geranium molle</i>	Soft Geranium	Non-Native

Plant Species Observed on the El Dorado Hills Memory Care Property
May 5, 2015

Family/Species Name	Common Name	Native/Non-Native
HYPERICACEAE		
<i>Hypericum perforatum</i> subsp. <i>perforatum</i>	Klamathweed	Non-Native
JUGLANDACEAE		
<i>Juglans hindsii</i>	Northern California Black Walnut	Native
JUNCACEAE		
<i>Juncus balticus</i> subsp. <i>ater</i>	Baltic Rush	Native
<i>Juncus xiphioides</i>	Iris-Leaved Rush	Native
<i>Luzula comosa</i> var. <i>comosa</i>	Wood-rush	Native
LILIACEAE		
<i>Calochortus albus</i>	White Globe Lily, Fairy-Lantern	Native
MORACEAE		
<i>Ficus carica</i>	Edible Fig	Non-Native
ONAGRACEAE		
<i>Clarkia purpurea</i> subsp. <i>quadrivulnera</i>	Wine Cup Clarkia	Native
<i>Epilobium ciliatum</i> subsp. <i>ciliatum</i>	Willowherb	Native
PAPAVERACEAE		
<i>Eschscholzia californica</i>	California Poppy	Native
PINACEAE		
<i>Pinus sabiniana</i>	Foothill Pine	Native
PLANTAGINACEAE		
<i>Plantago lanceolata</i>	English Plantain	Non-Native
POACEAE		
<i>Aegilops triuncialis</i>	Barbed Goat Grass	Non-Native
<i>Aira caryophyllea</i>	Silver Hair Grass	Non-Native
<i>Avena barbata</i>	Slender Wild Oat	Non-Native
<i>Avena fatua</i>	Wild Oat	Non-Native
<i>Brachypodium distachyon</i>	False Brome	Non-Native
<i>Bromus diandrus</i>	Ripgut Grass	Non-Native

Plant Species Observed on the El Dorado Hills Memory Care Property
May 5, 2015

Family/Species Name	Common Name	Native/Non-Native
<i>Bromus hordeaceus</i>	Soft Chess	Non-Native
<i>Bromus madritensis subsp. rubens</i>	Red Brome	Non-Native
<i>Cynodon dactylon</i>	Bermuda Grass	Non-Native
<i>Cynosurus echinatus</i>	Bristly Dogtail Grass	Non-Native
<i>Elymus caput-medusae</i>	Medusa Head	Non-Native
<i>Festuca myuros</i>	Rattail Sixweeks Grass	Non-Native
<i>Festuca perennis</i>	Rye Grass	Non-Native
<i>Melica californica</i>	California Melic	Native
<i>Muhlenbergia rigens</i>	Deer Grass	Native
<i>Paspalum dilatatum</i>	Dallis Grass	Non-Native
<i>Phalaris aquatica</i>	Harding Grass	Non-Native
<i>Polypogon australis</i>	Chilean Beard Grass	Non-Native
<i>Stipa pulchra</i>	Purple Needle Grass	Native
POLYGONACEAE		
<i>Persicaria maculosa</i>	Spotted Lady's Thumb	Non-Native
<i>Rumex californicus</i>	California Dock	Native
<i>Rumex crispus</i>	Curly Dock	Non-Native
PTERIDACEAE		
<i>Pentagramma triangularis</i>	Goldback Fern	Native
ROSACEAE		
<i>Heteromeles arbutifolia</i>	Toyon	Native
<i>Pyracantha angustifolia</i>	Slender Firethorn	Non-Native
<i>Rubus armeniacus</i>	Himalayan Blackberry	Non-Native
RUBIACEAE		
<i>Galium parisiense</i>	Wall Bedstraw	Non-Native
<i>Galium porrigens</i>	Climbing Bedstraw	Native
SALICACEAE		
<i>Populus fremontii</i> subsp. <i>fremontii</i>	Fremont Cottonwood	Native
<i>Salix gooddingii</i>	Goodding's Black Willow	Native
<i>Salix laevigata</i>	Red Willow	Native
<i>Salix lasiolepis</i>	Arroyo Willow	Native

Plant Species Observed on the El Dorado Hills Memory Care Property
May 5, 2015

Family/Species Name	Common Name	Native/Non-Native
SAPINDACEAE		
<i>Aesculus californica</i>	California Buckeye	Native
THEMIDACEAE		
<i>Brodiaea elegans subsp. elegans</i>	Harvest Brodiaea	Native
TYPHACEAE		
<i>Typha angustifolia</i>	Narrow-Leaved Cattail	Native Or Non-Native
VISCACEAE		
<i>Phoradendron leucarpum</i>	American Mistletoe	Native
VITACEAE		
<i>Vitis vinifera</i>	Cultivated Grape	Non-Native

Memo

To: Rommel Pabalinas, El Dorado County

From: Ginger Fodge, Principal

Date: April 8, 2016

Subject: Addendum to the Biological Resources Assessment for the El Dorado Hills Memory Care Project

Per your request, I have revised the "conclusions" section of the Biological Resources Assessment for the El Dorado Hills Memory Care Project to provide additional detail in the recommended mitigation measures for potential impacts to western pond turtle, nesting raptors, and roosting bats. The addendum is attached. Please contact me with any questions.

**Addendum to the Biological Resources Assessment
For the El Dorado Hills Memory Care Project
El Dorado County, California
April 2016**

CONCLUSIONS / RECOMMENDATIONS

Special-Status Species

There is a low potential for the following plant species to occur on the site:

- Jepson's onion,
- Big-scale balsamroot,
- Red Hills soaproot,
- Pine Hill flannelbush,
- Layne's ragwort, and
- Sanford's arrowhead.

However, protocol-level plant surveys were conducted in 2015, and none of these species or any other rare plants were detected. Therefore, it is not anticipated that rare plants occur on the Project site.

There is a high potential for western pond turtle to occur in the creek along the northern edge of the site. It is recommended that pre-construction western pond turtle surveys be conducted by a qualified biologist prior to any work within or adjacent to the creek. Any turtles found within the immediate work area shall be relocated within the same stream channel by a qualified biologist holding all required permits.

There is a low potential for the following special-status birds to occur on the site:

- Golden eagle,
- Swainson's hawk,
- Bald eagle, and
- Tricolored blackbird.

In addition, all migratory birds are protected by the MBTA, as discussed above. Therefore, the following mitigation measures are recommended: Pre-construction nesting bird surveys shall be conducted by a qualified biologist within 14 days of initiation of any construction during the nesting season (end of February through end of August). During the survey, the qualified wildlife biologist shall inspect all trees in and immediately adjacent to the impact area for raptor and migratory bird nests. If the survey does not identify any nesting raptor species on or near the construction site, further mitigation is not required. However, should any raptor species be found nesting on or near the construction site (within 500 feet of construction activities), the following mitigation measures shall be implemented:

- a. Prior to the issuance of Improvement Plans, the project applicant, in consultation with El Dorado County and CDFW, shall avoid all birds of prey or migratory bird nest sites located in the construction area during breeding season while the nest is occupied with adults and/or eggs or young. The occupied nest shall be monitored by a qualified wildlife biologist to determine

when the nest is no longer used. Avoidance shall include the establishment of a no disturbance buffer zone around the nest site. The size of the buffer zone shall be determined in consultation with El Dorado County and CDFW. Highly visible temporary construction fencing shall delineate the buffer zone.

- b. If a legally-protected species nest is located in a tree designated for removal, the removal shall be deferred until after August 31, or until the adults and young are no longer dependent on the nest site, as determined by a qualified biologist.

There is a high potential for the following bat species to roost in the trees on-site:

- Pallid bat,
- Silver-haired bat,
- Western red bat, and
- Hoary Bat

The following mitigation measures are recommended: Pre-construction bat surveys shall be conducted on-site by a qualified bat biologist within 14 days of any tree removal that will occur during the breeding season (April through August). Pre-construction surveys are not required for tree removal activities scheduled to occur during the non-breeding season, as determined by a qualified bat biologist. If pre-construction surveys indicate that no roosts of special-status bats are present, or that roosts are inactive or potential habitat is unoccupied, no further mitigation is required. If roosting bats are found, exclusionary measures approved by CDFW and USFWS shall be installed by a qualified bat biologist. Once the bats have been excluded, tree removal may occur. If these actions do not result in exclusion, a qualified biologist in possession of an applicable Department of Fish and Wildlife Memorandum of Understanding should consult with CDFW to determine appropriate relocation methods.

Waters of the U.S.

A total of 0.125 acre of creek/channel and 0.056 acre of seasonal wetland swale occur within the Project site. If any impacts to any of these features are proposed, regulatory permits may be necessary as follows. For direct fill the following would be necessary:

- CWA Section 404 Permit from the U.S. Army Corps of Engineers
- CWA Section 401 Water Quality Certification from the Regional Water Quality Control Board
- Section 1600 Lake and Streambed Alteration Agreement (LSAA) from CDFW

If activities are proposed that would not result in fill being placed in any of these features, but would involve work that could affect the bed, bank, or adjacent riparian zone of any of the channels, a LSAA from CDFW would still be necessary.



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1 November 2017

Mr. Brian Glover
Sierra Capital & Investments
7225 North First Street, Suite 101
Fresno, CA 93720

Phone: (971) 777-5497

Email: brian@sierracapitalinvestments.com

Subject: Oak Woodland Technical Report for El Dorado Hills Memory Care (Pavilions), El Dorado County, CA.

Dear Mr. Glover:

The County has drafted a new oak woodland policy, the Oak Resources Management Plan (ORMP; El Dorado County 2016). The ORMP is expected to be adopted in late 2017. The El Dorado Hills Memory Care Project intends to meet the documentation and mitigation requirements of the ORMP. This technical report was prepared based on the specifications of the ORMP.

Methods

I conducted a field review of the project site on 8 August 2017. A recent aerial photograph for the site was selected as the base for the oak woodland map. The field review and aerial photograph were used to determine the areas of oak woodland on the site. Large grassy areas were excluded from oak woodland. Also, a small (0.08 acre) area of willows and alder trees was identified along a drainage on the north side of the site based on aerial photography and field review. This small area was not counted as oak woodland.

The ORMP defines oak woodland as “an oak stand with a greater than 10 percent canopy cover or that may have historically supported greater than 10 percent canopy cover” (CA Fish and Game Code §1361). About 72% of the trees at the site are blue oaks and about 20% are interior live oaks (Sierra Nevada Arborists 2006). The remainder are mostly foothill pines, a common component tree of oak woodlands. There are four valley oaks at the site. Oak woodlands at the site were classified under the California Department of Fish and Wildlife’s Natural Communities List (CDFW 2010, Sawyer *et al.* 2009).

The ORMP defines a Heritage Tree as “Any live native oak tree of the genus *Quercus* (including blue oak (*Quercus douglasii*), valley oak (*Quercus lobata*), California black oak (*Quercus kelloggii*), interior live oak (*Quercus wislizeni*), canyon live oak (*Quercus chrysolepis*), Oregon oak (*Quercus garryana*), oracle oak (*Quercus x morehus*), or hybrids thereof) with a single main trunk measuring 36 inches dbh or greater, or with multiple trunk with an aggregate trunk diameter measuring 36 inches or greater.” Further, the ORMP requires mitigation for the removal of Heritage Trees, regardless of whether the Heritage Tree is inside or outside oak woodland. Therefore, during the August 8, 2017 site visit, the site was assessed for the presence of Heritage Trees, identified on Attachment B.

The project footprint was identified based on Project design dated July 2017 supplied by CTA Engineering & Surveying. The acreage of oak woodland impacts was compared to the baseline acreage of oak woodland to identify the mitigation ratios specified by the ORMP and to estimate the in-lieu fee.

Oak Woodland Impacts and Mitigation

- The parcel comprises approximately 6.85 ac. Blue oak woodland covers 5.13 acres of the parcel (Attachment A; CDFW 2010, Sawyer *et al.* 2009).
- The map in Attachment B identifies oak woodland that will be removed as a result of the Project. The Project will result in the removal of 2.53 acres of oak woodland. Temporary storage of soil in a grassy area near Cambria Way will not harm trees or remove oak woodland.
- The Project will remove about 49% of the oak woodland (2.53/5.13). The ORMP specifies that oak woodland impacts up to 50% of existing shall be mitigated at a ratio of 1:1.
- The Project intends to mitigate for impacts to oak woodland via payment of the in-lieu fee identified in the ORMP. The in-lieu fee for oak woodland is \$8,285 per acre.
- The estimated Project in-lieu fee is \$20,961.05 (2.53 acres x \$8,285 per acre). The ultimate determination of the fee amount will be made by El Dorado County.
- There is one Heritage Tree on the site, in oak woodland that is avoided by the Project (Attachment B). The Heritage Tree is a multi-trunk interior live oak (*Quercus wislizeni*). The Heritage Tree is avoided by the Project.

Recommended Oak Tree Preservation Measures

Retained oak woodland will surround much of the Project after construction. Oak preservation measures were developed for the project based on Matheny and Clark (1998). Retained trees may be affected by project activities such as clearing, grading, and pruning for clearance requirements. The tree preservation measures below are recommended for preservation of retained trees during the construction process. Most of the retained oaks are not in the immediate vicinity of proposed construction.

Pre-construction

- A tree protection zone (TPZ) shall be established around retained trees. The TPZ shall extend 20 feet beyond the dripline where possible given grading limits. The TPZ around retained trees near the limit of grading will be much smaller. If a smaller TPZ is required in ungraded areas, six inches of mulch or wood/bark chips will be placed over areas of vehicle traffic to minimize soil compaction.
- The TPZ shall be marked with minimum 4 foot high orange construction fence hung on posts (such as T-posts) before clearing occurs. The fence shall not be supported by trees or other vegetation. The fence shall remain in place until construction is complete.
- There shall be no driving, parking, or storage of supplies or equipment within the TPZ. Entry of construction personnel into the TPZ is not allowed except for maintenance of the fence or other activities undertaken for the protection of trees.
- The tree canopy along the TPZ boundary shall be inspected prior to vegetation clearing in the area of grading. The canopy of trees to be removed shall be pruned where it is intertwined with the canopy of retained trees, or wherever felling of trees to be removed may damage the canopy

of retained trees. The canopy of retained trees that overhangs the area to be graded shall be pruned to the minimum height required for construction.

- Pruning of retained trees shall be conducted in accordance with American National Standard Institute (ANSI) A300 Pruning Standard and adhere to the most recent edition of ANSI Z133.1.

During Vegetation Clearing

- Brush clearing along the TPZ boundary may be necessary in some areas for installation of a fence. Brush along the TPZ boundary, outside areas to be graded, shall be cut near ground level, not removed by the roots. Brush shall be cut and removed so that trees in the TPZ are not harmed. Brush shall not be disposed of in the TPZ.
- Trees in the area of grading shall be felled in a direction away from the TPZ.

We appreciate the opportunity of assisting you with this project. If you have any questions please contact me.

Cordially,



Chuck Hughes, M.S.
Senior Biologist
(ISA Certified Arborist WE-6885A)

Attachment A. Baseline Oak Woodland Map




Attachment B. Oak Impact Map

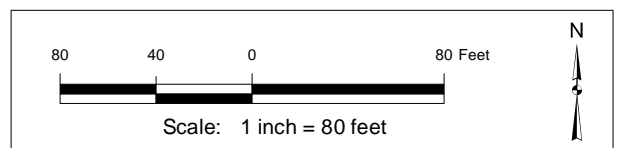
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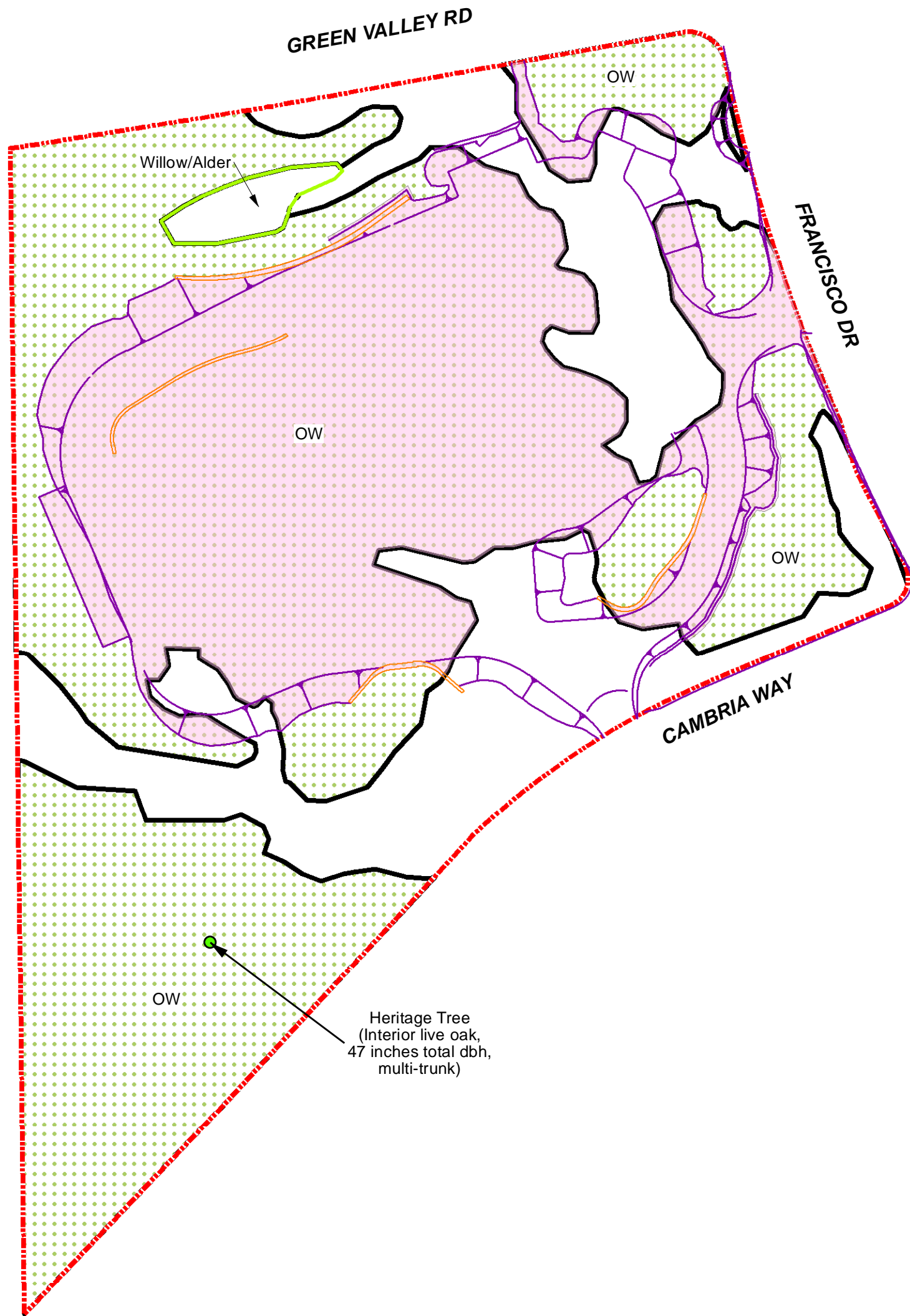
El Dorado Hills Memory Care
 El Dorado County, CA
 25 October 2017

-  Project Boundary (6.85 ac)
-  Blue oak woodland (BOW; 5.13 ac)
-  Willow/Alder (0.08 ac)









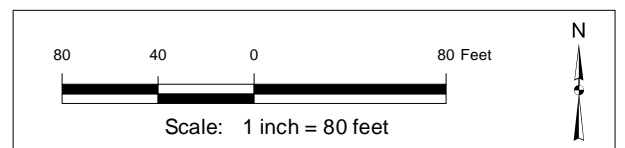
Aerial Photograph: 16 April 2015, Google Earth Pro Imagery
 Site Plan: 15-002-001-BASE.dwg (Rec'd. 8 August 2017)
 Grading Plan: 15-002-001 GRAD BASE.dwg (Rec'd. 8 August 2017)
 by CTA Engineering and Surveying

Attachment A.
 Baseline Oak Woodland Map



El Dorado Hills Memory Care
 El Dorado County, CA
 1 November 2017

-  Project Boundary (6.85 ac)
-  Oak Woodland (OW; 5.13 ac)
-  Willow/Alder (0.08 ac)
-  Proposed Grading
-  Proposed Retaining Wall
-  Project Footprint/ Impact to Oak Woodland (2.53 ac)



Site Plan: 15-002-001-BASE.dwg (Rec'd. 8 August 2017)
 Grading Plan: 15-002-001 GRAD BASE.dwg (Rec'd. 8 August 2017)
 by CTA Engineering and Surveying

Attachment B.
 Oak Impact Map

EL DORADO HILLS MEMORY CARE (THE PAVILIONS)

DRAINAGE REPORT

Prepared: April 2016



ATTACHMENT R

The following Drainage Report was prepared in support of Improvement Plans for the overall El Dorado Hills Memory Care project, which preceded planning approval. Portions of this Drainage Report are applicable to the Preliminary Grading and Drainage Plan for El Dorado Hills Memory Care Phase I.

PREAMBLE

This report was prepared by CTA Engineering & Surveying for the El Dorado Hills Memory Care site, located in El Dorado County, California. The information presented in this report is intended to support on-site infrastructure improvements for El Dorado Hills Memory Care and to comply with the 2004 Storm Water Management Plan to the maximum extent practical; any other use of this report and its associated technical analyses and models, is at the user's sole risk.

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SHED MAP

APPENDICES

Appendix A – Precipitation Data

- Mean Annual Precipitation Figure
- Rainfall Depths
- Table A-1 I-D-F Conversions

Appendix B – StormCAD Computations

Appendix C – Ditch Flow Computations

- Table C-1 Ditch Flow Calculation Summary
- “n” Values
- Flowmaster Summaries
- Permissible Velocities

Appendix D - Culvert Flows

- (Existing) Circular Culvert
- Inverted Box Culvert
 - Estimated Q100
 - Culvert/Channel Geometry
 - Uniform Flow Computation

SUMMARY

The drainage report accompanies improvement plans for El Dorado Hills Memory Care. This document provides hydrologic and hydraulic computations, in adherence with guidelines and procedures of the *County of El Dorado Drainage Manual*, adopted March 14, 1995, that validate storm drainage design shown on the plans.

1.0 - INTRODUCTION

El Dorado Hills Memory Care is located on approximately 6.9 acres, on the southwest corner of the intersection of Green Valley Road with Francisco Drive, in the community of El Dorado Hills. It is bounded on the south by the Francisco Oaks residential subdivision and on the west by undeveloped land. Project access will be from Cambria Way on the south and Green Valley Road on the north.

2.0 - EXISTING CONDITIONS

The project site currently consists of oak woodland interspersed with grassy areas. The site slopes generally from east to west and is crossed by a natural drainage channel that flows roughly parallel to Green Valley Road. Runoff from developed areas to the north and east flow onsite via existing storm drain pipes that cross Green Valley Road and Francisco Drive.

3.0 - PROPOSED CONDITIONS

Proposed site grading maintains natural drainage patterns. In-tract improvements are sized to intercept local runoff and convey it across the project to existing discharge points along the western property line, intercepting flows generated offsite as necessary. Proposed drainage facilities are shown on the accompanying Shed Map.

4.0 - RUNOFF COMPUTATIONS

Runoff computations utilize the rational formula, $Q=CiA$, for computing runoff associated with 10- and 100-year rainfall events. In the equation, Q is flow in cfs, C is a non-dimensional runoff coefficient \leq one; i is rainfall intensity in inches per hour associated with the design storm under consideration and the time of runoff concentration of the watershed, and; A is the catchment area, in acres. Precipitation data used for the study are based on a mean annual precipitation of 25 inches. See Appendix A.

4.1 - PROCEDURES

4.1.1 - SHED AREAS – Shed areas shown on the enclosed Shed Map were measured using AutoCAD. The boundaries of offsite shed areas were estimated from USGS topography and Google Earth aerial imagery.

4.1.2 - PRECIPITATION – See Appendix A for precipitation data used in this drainage report. Rainfall intensities for durations of 5 through 30 minutes and a mean annual precipitation of 25 inches are as follows:

DESIGN RAINFALL INTENSITIES

DURATION (MIN)	10 YEAR STORM INTENSITY (IN/HR)	100 YEAR STORM INTENSITY (IN/HR)
5	2.33	3.29
10	1.66	2.35
15	1.36	1.94
30	0.98	1.38

4.1.3 - TIME OF CONCENTRATION – A 5-minute minimum time of concentration was used for on-site catchment areas. Flow time for offsite runoff to reach the site was estimated to be 10 minutes, based on common storm drainage design practice.

4.1.4 - RUNOFF COEFFICIENTS – A runoff coefficient, C, of one was used in peak flow computations. This is a conservative assumption with respect to drainage design, representing a condition in which all rainfall runoff enters the storm drain system, i.e. there are no losses due to interception, evaporation, transpiration, etc.

4.1.5 - PEAK RUNOFF – 10- and 100-year peak runoff was computed using the rational formula $Q=CiA$, utilizing the StormCAD computer program.

4.1.6 - PIPE FLOWS – Version 8i of the StormCAD program was used to evaluate flow in proposed storm drain pipes. Results are summarized in Appendix B.

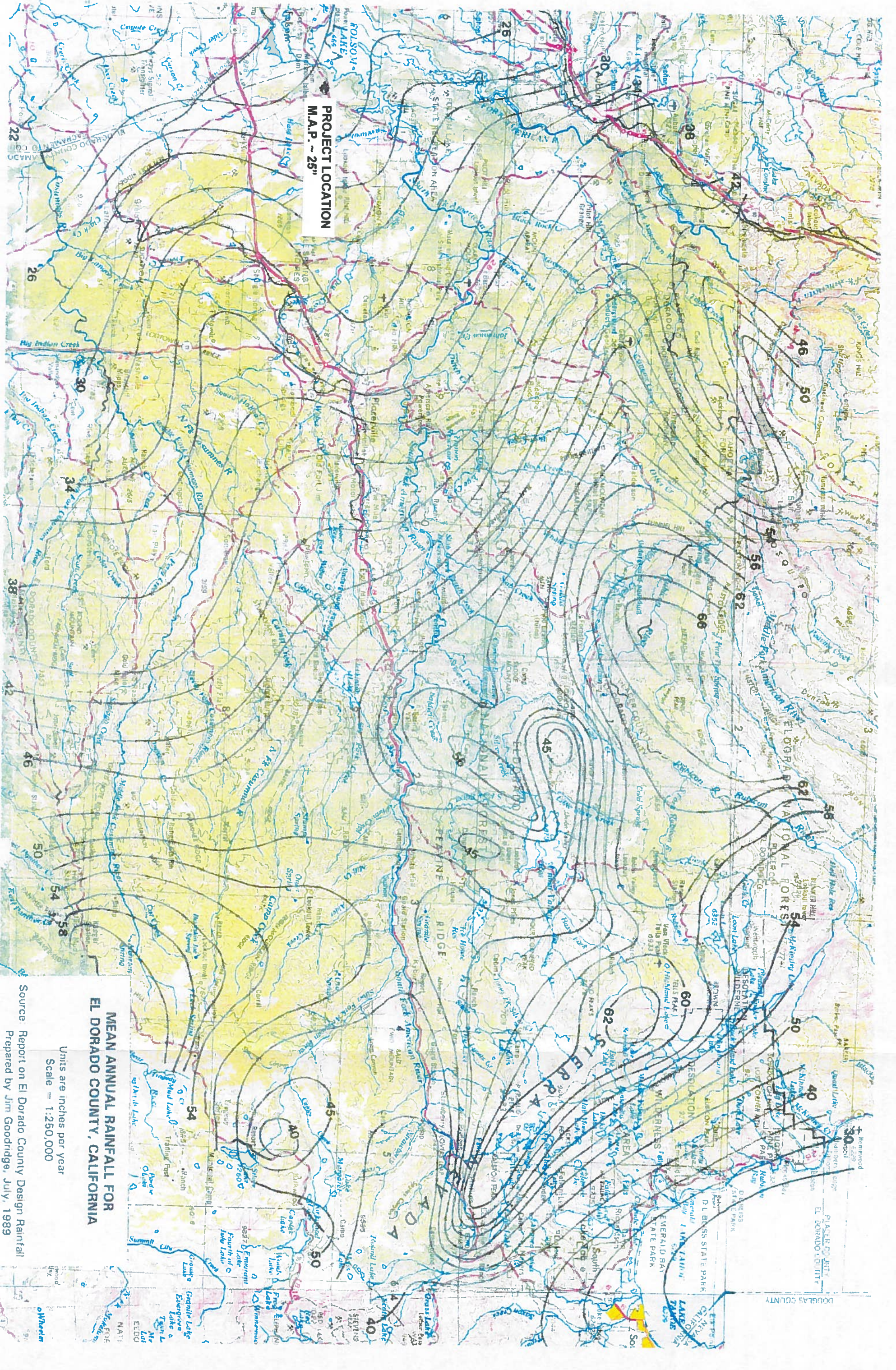
4.1.7 - DITCH FLOWS – Flow at normal depth in proposed rock-lined ditch sections was evaluated by means of the Flowmaster computer program. Results are summarized in Appendix C.

4.1.8 - CULVERT FLOWS – Adequacy of the existing on-site culvert to pass anticipated 100-year design flow was evaluated by means of a standard culvert design chart. The proposed inverted box culvert was sized to span designated wetland area. Culvert capacity was evaluated using Flowmaster, based on uniform flow in the approach channel resulting from a 100-year event. Channel flow was estimated using the HEC-HMS hydrograph computation method. Results are summarized in Appendix D.

5.0 - RESULTS AND CONCLUSIONS

- StormCAD summary data, including flow profiles of proposed piping, are included in Appendix B. The analyses verify that storm drain improvements as shown are adequately sized to convey computed runoff and meet County design standards. The drain pipes are designed to keep the HGL₁₀ below the ceiling of the pipes and the EGL₁₀ at least 0.5 feet below all manhole lids and grate inlets.
- Computations summarized in Appendix C verify that the proposed rock-lined triangular ditch section is capable of conveying anticipated 100-year runoff at non-erosive velocities. Depths of flow in the one-foot deep section range from 0.35' – 0.68'. Since there are no structures below the ditch sections, additional freeboard is not warranted.
- Culvert data are summarized in Appendix D. The existing culvert has been shown to have adequate capacity to pass Q₁₀₀, based on a standard culvert design nomograph. Uniform flow computations verify that the proposed inverted box culvert can safely pass estimated Q₁₀₀.

APPENDIX A
Precipitation Data



PROJECT LOCATION
M.A.P. ~ 25"

**MEAN ANNUAL RAINFALL FOR
EL DORADO COUNTY, CALIFORNIA**

Units are inches per year
Scale = 1:250,000

Source Report on El Dorado County Design Rainfall
Prepared by Jim Goodridge, July, 1989

El Dorado Design Rainfall

Rainfall Depth in Inches for Return Period = 10 years

Mean Annual Precipitation	5 Min	10 Min	15 Min	30 Min	1 Hr	2 Hrs	3 Hrs	6 Hrs	12 Hrs	24 Hrs
20	0.167	0.239	0.295	0.422	0.603	0.863	1.065	1.524	2.180	3.120
22	0.177	0.254	0.313	0.448	0.640	0.916	1.130	1.617	2.314	3.311
24	0.188	0.269	0.332	0.475	0.679	0.972	1.198	1.715	2.454	3.511
25" → 26	0.199	0.284	0.350	0.502	0.718	1.027	1.267	1.812	2.594	3.711
28	0.209	0.300	0.369	0.529	0.756	1.082	1.335	1.910	2.733	3.911
30	0.220	0.315	0.388	0.556	0.795	1.138	1.403	2.008	2.873	4.111
32	0.231	0.330	0.407	0.583	0.834	1.193	1.471	2.105	3.013	4.311
34	0.241	0.345	0.426	0.610	0.872	1.248	1.540	2.203	3.153	4.511
36	0.252	0.361	0.445	0.637	0.911	1.304	1.608	2.301	3.292	4.711
38	0.263	0.376	0.464	0.664	0.950	1.359	1.676	2.398	3.432	4.911
40	0.274	0.391	0.483	0.691	0.988	1.414	1.744	2.496	3.572	5.111
42	0.284	0.407	0.502	0.718	1.027	1.470	1.813	2.594	3.712	5.311
44	0.295	0.422	0.520	0.745	1.066	1.525	1.881	2.691	3.851	5.511
46	0.306	0.437	0.539	0.772	1.104	1.580	1.949	2.789	3.991	5.711
48	0.316	0.453	0.558	0.799	1.143	1.636	2.017	2.887	4.131	5.911
50	0.327	0.468	0.577	0.826	1.182	1.691	2.086	2.984	4.271	6.111
52	0.338	0.483	0.596	0.853	1.221	1.747	2.154	3.082	4.410	6.311
54	0.348	0.499	0.615	0.880	1.259	1.802	2.222	3.180	4.550	6.511
56	0.359	0.514	0.634	0.907	1.298	1.857	2.290	3.277	4.690	6.711
58	0.370	0.529	0.653	0.934	1.337	1.913	2.359	3.375	4.830	6.911
60	0.381	0.545	0.672	0.961	1.375	1.968	2.427	3.473	4.969	7.111
62	0.391	0.560	0.690	0.988	1.414	2.023	2.495	3.570	5.109	7.311
64	0.402	0.575	0.709	1.015	1.453	2.079	2.563	3.668	5.249	7.511
66	0.413	0.591	0.728	1.042	1.491	2.134	2.632	3.766	5.389	7.711
68	0.423	0.606	0.747	1.069	1.530	2.189	2.700	3.863	5.528	7.911
70	0.434	0.621	0.766	1.096	1.569	2.245	2.768	3.961	5.668	8.111
72	0.445	0.636	0.785	1.123	1.607	2.300	2.836	4.059	5.808	8.311
74	0.455	0.652	0.804	1.150	1.646	2.355	2.905	4.156	5.948	8.511
76	0.466	0.667	0.823	1.177	1.685	2.411	2.973	4.254	6.087	8.711
78	0.477	0.682	0.842	1.204	1.723	2.466	3.041	4.352	6.227	8.911
80	0.488	0.698	0.860	1.231	1.762	2.521	3.109	4.449	6.367	9.111
82	0.498	0.713	0.879	1.258	1.801	2.577	3.178	4.547	6.507	9.311
84	0.509	0.728	0.898	1.285	1.839	2.632	3.246	4.645	6.646	9.511
86	0.520	0.744	0.917	1.312	1.878	2.687	3.314	4.742	6.786	9.711
88	0.530	0.759	0.936	1.339	1.917	2.743	3.382	4.840	6.926	9.911
90	0.541	0.774	0.955	1.366	1.955	2.798	3.451	4.938	7.066	10.111

Source: Design Rainfall Tables for El Dorado County, prepared by Jim Goodridge, July 29, 1989

El Dorado Design Rainfall

Rainfall Depth in Inches for Return Period = 100 years

Mean Annual Precipitation	5 Min	10 Min	15 Min	30 Min	1 Hr	2 Hrs	3 Hrs	6 Hrs	12 Hrs	24 Hrs
20	0.237	0.339	0.418	0.598	0.855	1.224	1.509	2.160	3.091	4.423
22	0.251	0.359	0.443	0.634	0.908	1.299	1.602	2.292	3.280	4.694
24	0.266	0.381	0.470	0.673	0.963	1.377	1.699	2.431	3.478	4.977
25" → 26	0.282	0.403	0.497	0.711	1.017	1.456	1.795	2.569	3.676	5.261
28	0.297	0.425	0.524	0.749	1.072	1.534	1.892	2.708	3.874	5.544
30	0.312	0.446	0.550	0.788	1.127	1.613	1.989	2.846	4.073	5.828
32	0.327	0.468	0.577	0.826	1.182	1.691	2.086	2.984	4.271	6.111
34	0.342	0.490	0.604	0.864	1.237	1.770	2.182	3.123	4.469	6.395
36	0.357	0.511	0.631	0.903	1.291	1.848	2.279	3.261	4.667	6.678
38	0.373	0.533	0.657	0.941	1.346	1.927	2.376	3.400	4.865	6.962
40	0.388	0.555	0.684	0.979	1.401	2.005	2.473	3.538	5.063	7.245
42	0.403	0.577	0.711	1.017	1.456	2.083	2.569	3.677	5.261	7.529
44	0.418	0.598	0.738	1.056	1.511	2.162	2.666	3.815	5.459	7.812
46	0.433	0.620	0.765	1.094	1.566	2.240	2.763	3.954	5.657	8.096
48	0.448	0.642	0.791	1.132	1.620	2.319	2.860	4.092	5.856	8.379
50	0.464	0.663	0.818	1.171	1.675	2.397	2.956	4.230	6.054	8.663
52	0.479	0.685	0.845	1.209	1.730	2.476	3.053	4.369	6.252	8.946
54	0.494	0.707	0.872	1.247	1.785	2.554	3.150	4.507	6.450	9.230
56	0.509	0.729	0.898	1.286	1.840	2.633	3.247	4.646	6.648	9.513
58	0.524	0.750	0.925	1.324	1.895	2.711	3.343	4.784	6.846	9.797
60	0.539	0.772	0.952	1.362	1.949	2.790	3.440	4.923	7.044	10.080
62	0.555	0.794	0.979	1.401	2.004	2.868	3.537	5.061	7.242	10.364
64	0.570	0.815	1.006	1.439	2.059	2.946	3.634	5.200	7.440	10.647
66	0.585	0.837	1.032	1.477	2.114	3.025	3.730	5.338	7.639	10.931
68	0.600	0.859	1.059	1.516	2.169	3.103	3.827	5.476	7.837	11.214
70	0.615	0.881	1.086	1.544	2.223	3.182	3.924	5.615	8.035	11.498
72	0.630	0.902	1.113	1.592	2.278	3.260	4.021	5.753	8.233	11.781
74	0.646	0.924	1.139	1.630	2.333	3.339	4.117	5.892	8.431	12.064
76	0.661	0.946	1.166	1.669	2.388	3.417	4.214	6.030	8.629	12.348
78	0.676	0.967	1.193	1.707	2.443	3.496	4.311	6.169	8.827	12.631
80	0.691	0.989	1.220	1.745	2.498	3.574	4.408	6.307	9.025	12.915
82	0.706	1.011	1.246	1.784	2.552	3.652	4.504	6.446	9.223	13.198
84	0.722	1.032	1.273	1.822	2.607	3.731	4.601	6.584	9.421	13.482
86	0.737	1.054	1.300	1.860	2.662	3.809	4.698	6.722	9.620	13.765
88	0.752	1.076	1.327	1.899	2.717	3.888	4.795	6.861	9.818	14.049
90	0.767	1.098	1.354	1.937	2.772	3.966	4.891	6.999	10.016	14.332

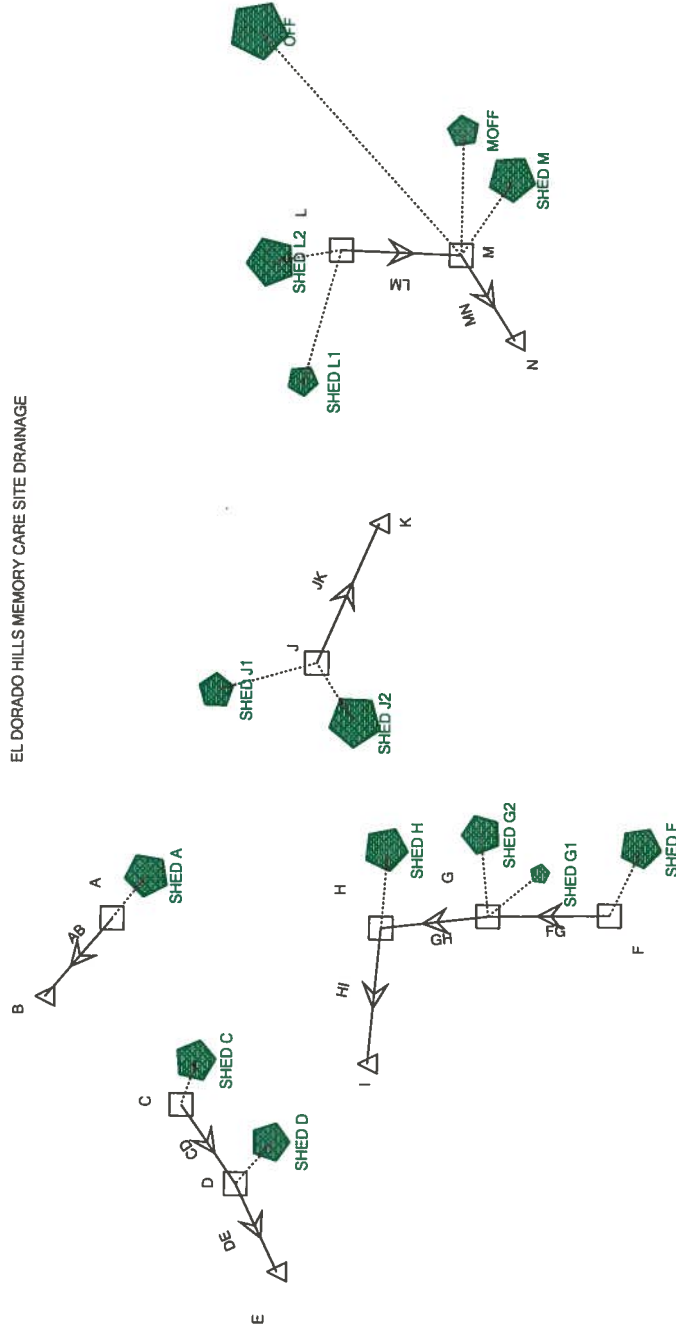
Source: Design Rainfall Tables for El Dorado County, prepared by Jim Goodridge, July 29, 1989

EL DORADO DESIGN RAINFALL			
(Source: Design Rainfall Tables for El Dorado County, prepared by Jim Goodridge, July 29, 1989)			
MAP (IN)	DURATION (MIN)	DEPTH (IN)	INTENSITY^{1/} (IN/HR)
10-YEAR RETURN PERIOD			
25	5	0.194	2.33
"	10	0.276	1.66
"	15	0.341	1.36
"	30	0.488	0.98
100-YEAR RETURN PERIOD			
25	5	0.274	3.29
"	10	0.392	2.35
"	15	0.484	1.94
"	30	0.692	1.38
^{1/} Intensity = 60 x Depth/Duration			

APPENDIX B

StormCAD Computations

Scenario: 10 YR
Active Scenario: 10 YR



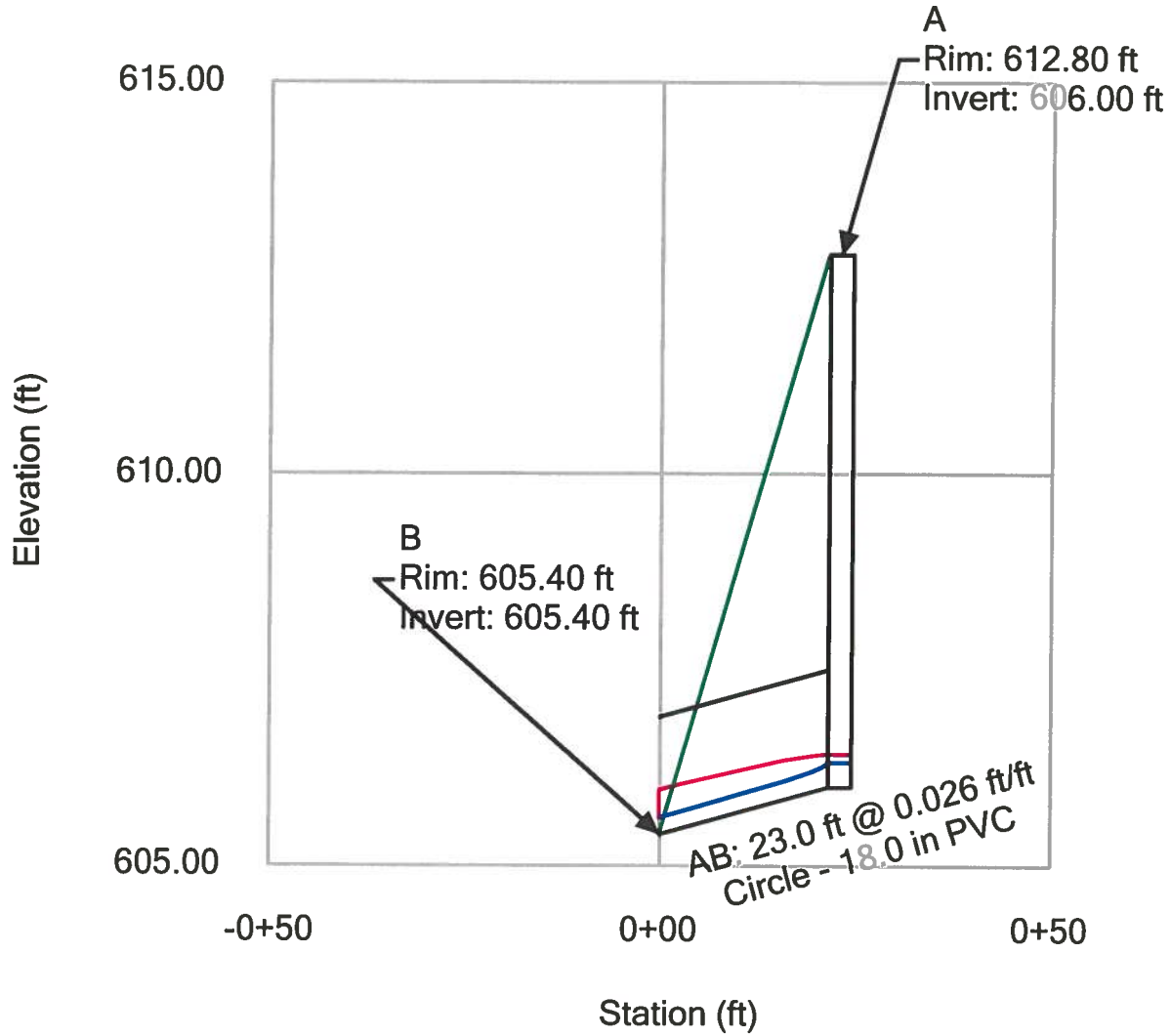
FlexTable: Catchment Table Active Scenario: 10 YR

ID	Label	Outflow Element	Area (User Defined) (acres)	Rational C	Time of Concentration (min)	Flow (Total Out) (ft ³ /s)	Notes	Catchment Intensity (in/h)
54	SHED A	A	0.310	1.000	5.000	0.73	Q=CIA (TYP)	2.330
112	SHED F	F	0.270	1.000	5.000	0.63		2.330
113	SHED G2	G	0.160	1.000	5.000	0.38		2.330
114	SHED H	H	0.260	1.000	5.000	0.61		2.330
115	SHED J1	J	0.200	1.000	5.000	0.47		2.330
116	OFF	L	5.800	1.000	10.000	9.71	EST OFFSITE AREA	1.660
117	SHED L1	L	0.160	1.000	5.000	0.27		1.660
118	SHED M	M	0.860	1.000	5.000	2.02		2.330
119	SHED C	C	0.180	1.000	5.000	0.42		2.330
120	SHED D	D	0.160	1.000	5.000	0.38		2.330
121	SHED L2	L	0.670	1.000	5.000	1.12		1.660
122	SHED J2	J	0.190	1.000	5.000	0.45		2.330
123	SHED G1	G	0.030	1.000	5.000	0.07		2.330
130	MOFF	M	0.600	1.000	5.000	1.41	FRANCISCO DR	2.330

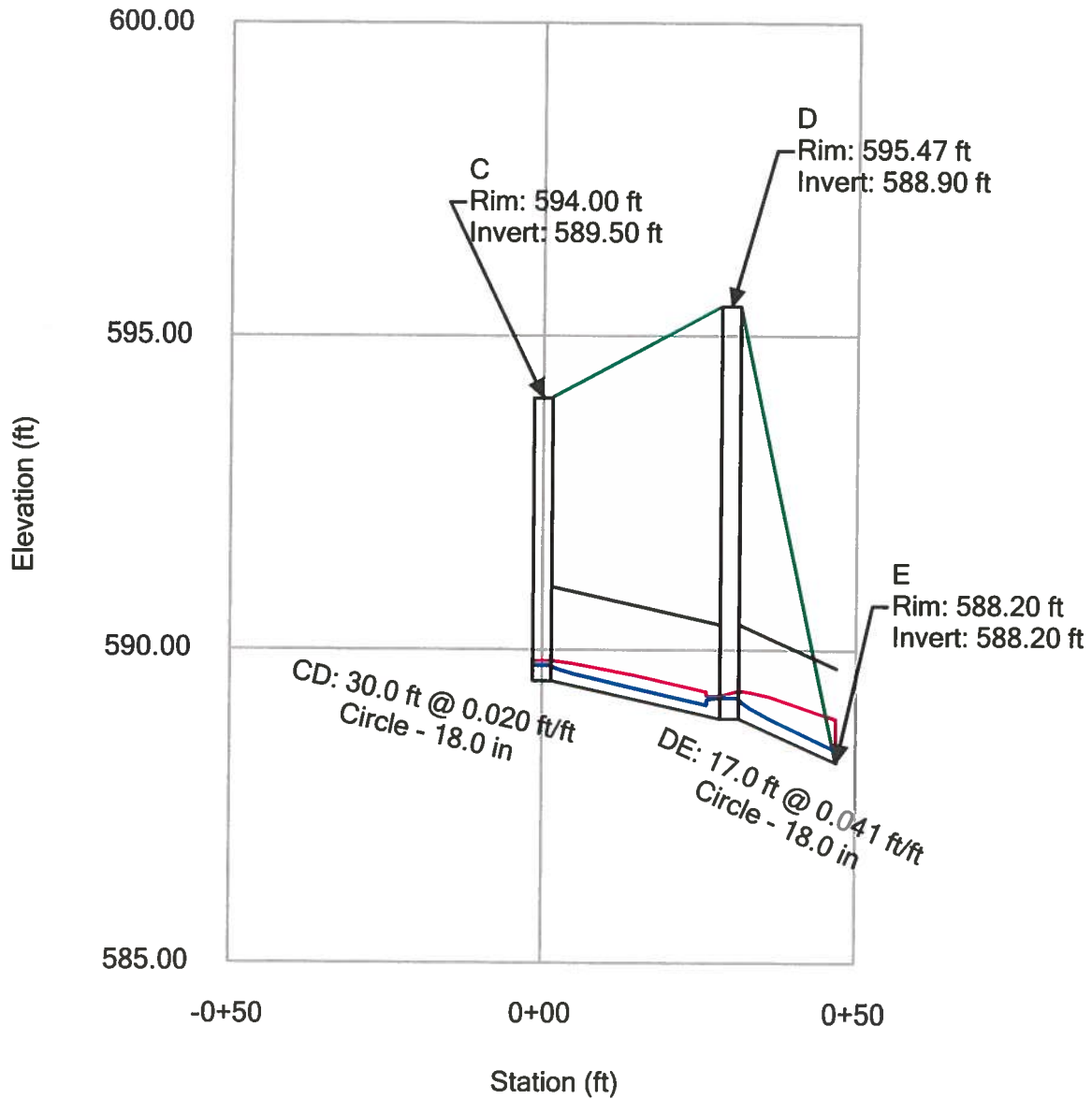
FlexTable: Conduit Table
Active Scenario: 10 YR

ID	Label	Start Node	Invert (Start) (ft)	Stop Node	Invert (Stop) (ft)	Length (User Defined) (ft)	Slope (Calculated) (ft/ft)	Diameter (in)	Manning's n	Flow (ft ³ /s)	Velocity (ft/s)	Capacity (Full Flow) (ft ³ /s)	Upstream Structure Energy Grade Line (ft)	Upstream Structure Hydraulic Grade Line (ft)	System Flow Time (min)	System Drainage Area (acres)	System Intensity (in/h)	Notes
38	AB	A	606.00	B	605.40	23.0	0.026	18.0	0.013	0.73	4.78	16.97	606.43	606.32	5.000	0.3	2.330	Q=CIA (TYP)
94	LM	L	609.10	M	608.78	65.0	0.005	24.0	0.013	11.09	5.46	15.87	610.80	610.34	10.000	6.6	1.660	
96	MN	M	608.78	N	608.50	54.0	0.005	24.0	0.013	13.44	5.79	16.29	610.52	610.16	10.198	8.1	1.648	
99	JK	J	610.10	K	609.62	9.0	0.053	18.0	0.013	0.92	6.58	24.26	610.58	610.46	5.000	0.4	2.330	
102	CD	C	589.50	D	588.90	30.0	0.020	18.0	0.013	0.42	3.70	14.85	589.82	589.74	5.000	0.2	2.330	
104	DE	D	588.90	E	588.20	17.0	0.041	18.0	0.013	0.79	5.76	21.31	589.26	589.23	5.135	0.3	2.312	
107	FG	F	603.65	G	603.18	23.0	0.020	18.0	0.013	0.63	4.22	15.02	604.05	603.95	5.000	0.3	2.330	
109	GH	G	602.70	H	601.25	27.0	0.054	18.0	0.013	1.07	6.92	24.34	603.36	603.09	5.091	0.5	2.318	
111	HI	H	601.25	I	600.00	23.0	0.054	18.0	0.013	1.68	7.93	24.49	601.81	601.74	5.156	0.7	2.309	

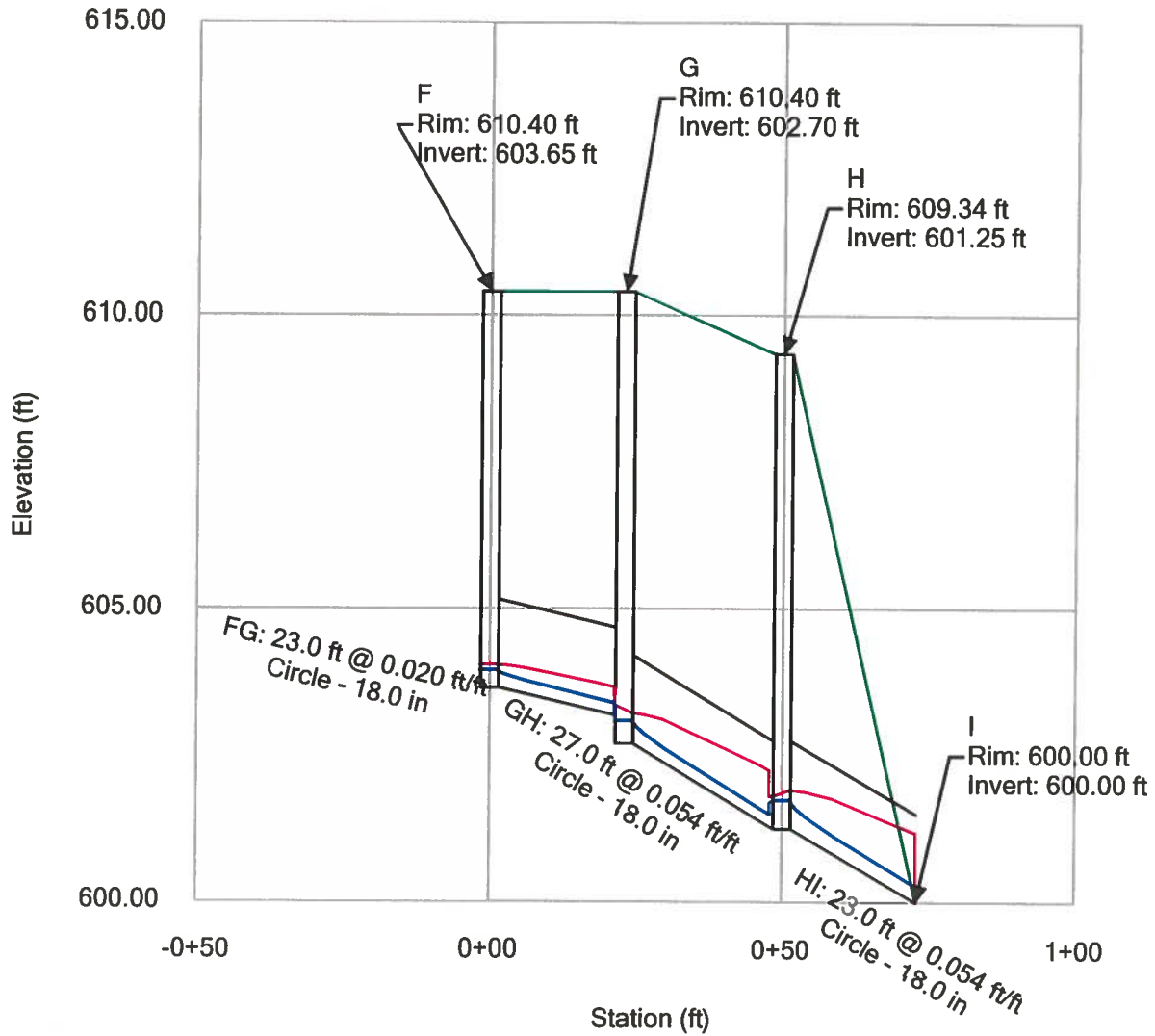
Profile Report
Engineering Profile - A-B (052015 STORM DRAINS.stsw)
Active Scenario: 10 YR



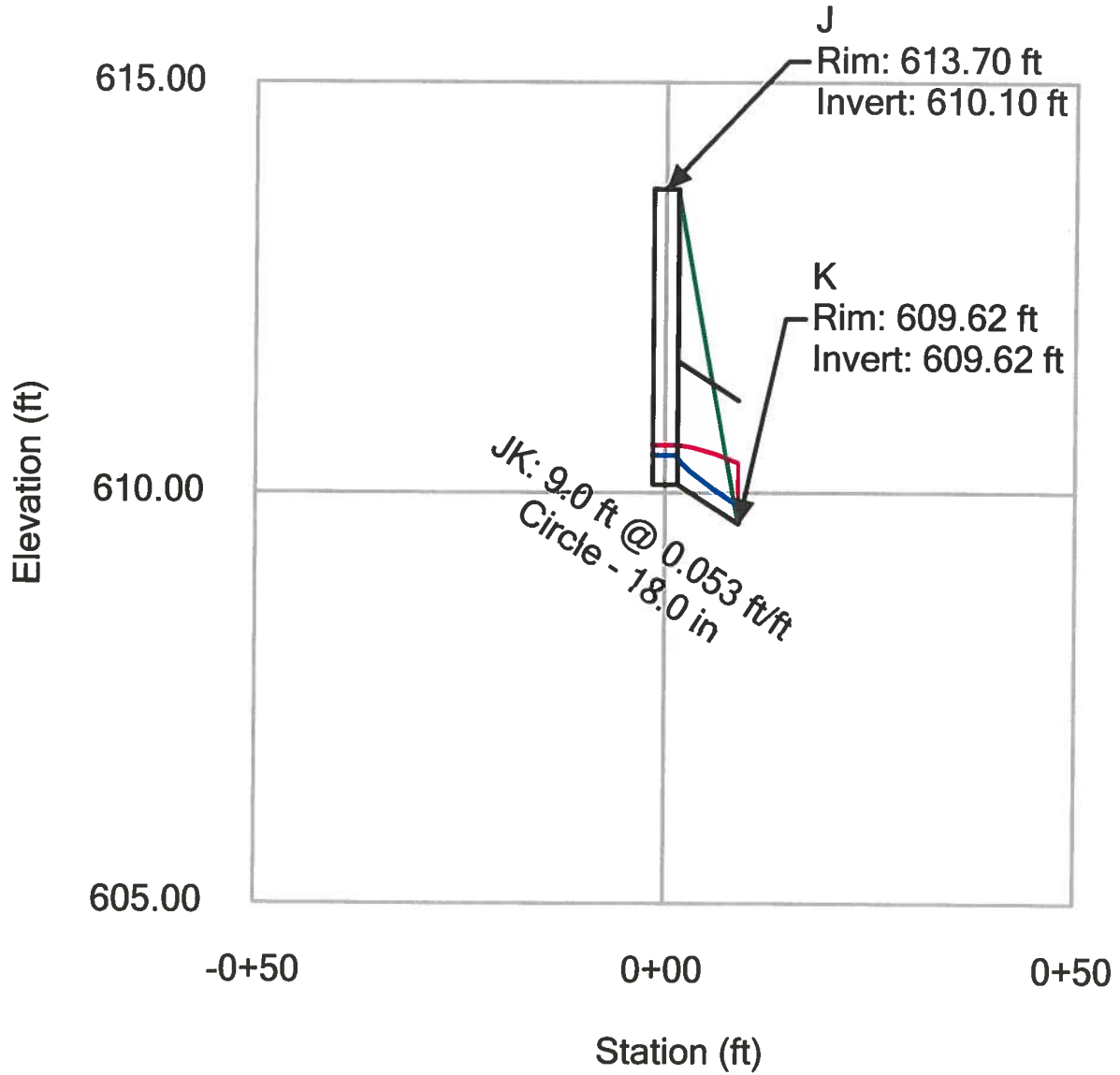
Profile Report
Engineering Profile - C-D-E (052015 STORM DRAINS.stsw)
Active Scenario: 10 YR



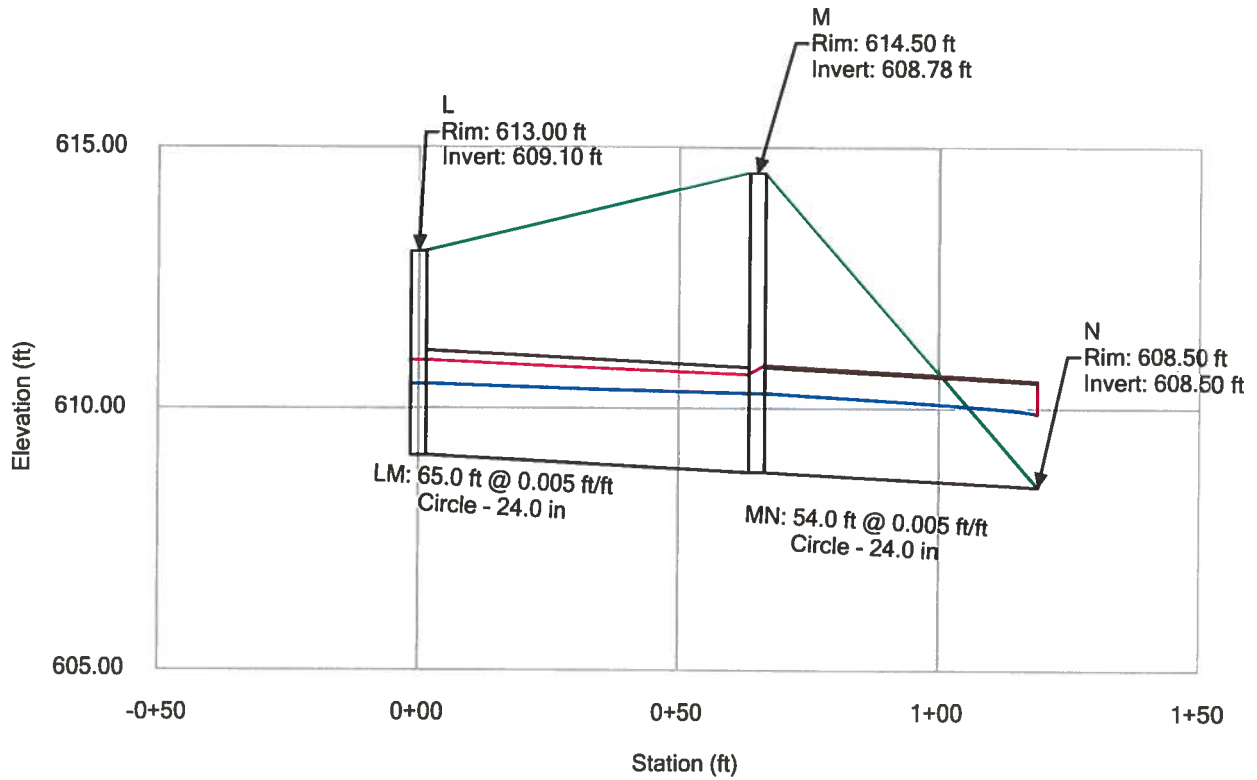
Profile Report
Engineering Profile - F-G-H-I (052015 STORM DRAINS.stsw)
Active Scenario: 10 YR



Profile Report
Engineering Profile - J-K (052015 STORM DRAINS.stsw)
Active Scenario: 10 YR



Profile Report
Engineering Profile - L-M-N (052015 STORM DRAINS.stsw)
Active Scenario: 10 YR



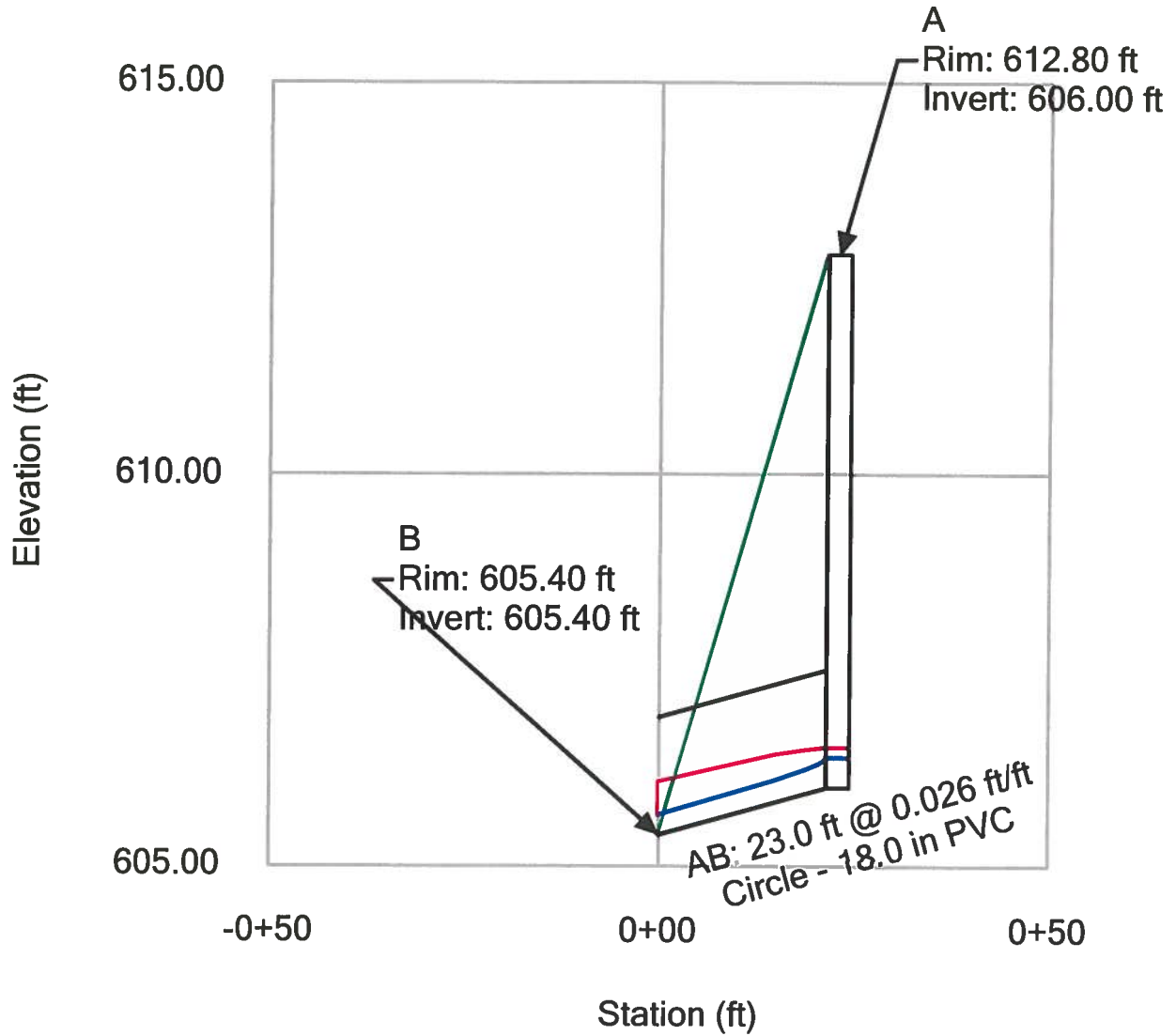
FlexTable: Catchment Table Active Scenario: 100 YEAR

ID	Label	Outflow Element	Area (User Defined) (acres)	Rational C	Time of Concentration (min)	Flow (Total Out) (ft ³ /s)	Notes	Catchment Intensity (in/h)
54	SHED A	A	0.310	1.000	5.000	1.03	Q=CIA (TYP)	3.290
112	SHED F	F	0.270	1.000	5.000	0.90		3.290
113	SHED G2	G	0.160	1.000	5.000	0.53		3.290
114	SHED H	H	0.260	1.000	5.000	0.86		3.290
115	SHED J1	J	0.200	1.000	5.000	0.66		3.290
116	OFF	L	5.800	1.000	10.000	13.74	EST OFFSITE AREA	2.350
117	SHED L1	L	0.160	1.000	5.000	0.38		2.350
118	SHED M	M	0.860	1.000	5.000	2.85		3.290
119	SHED C	C	0.180	1.000	5.000	0.60		3.290
120	SHED D	D	0.160	1.000	5.000	0.53		3.290
121	SHED L2	L	0.670	1.000	5.000	1.59		2.350
122	SHED J2	J	0.190	1.000	5.000	0.63		3.290
123	SHED G1	G	0.030	1.000	5.000	0.10		3.290
130	MOFF	M	0.600	1.000	5.000	1.99	FRANCISCO DR	3.290

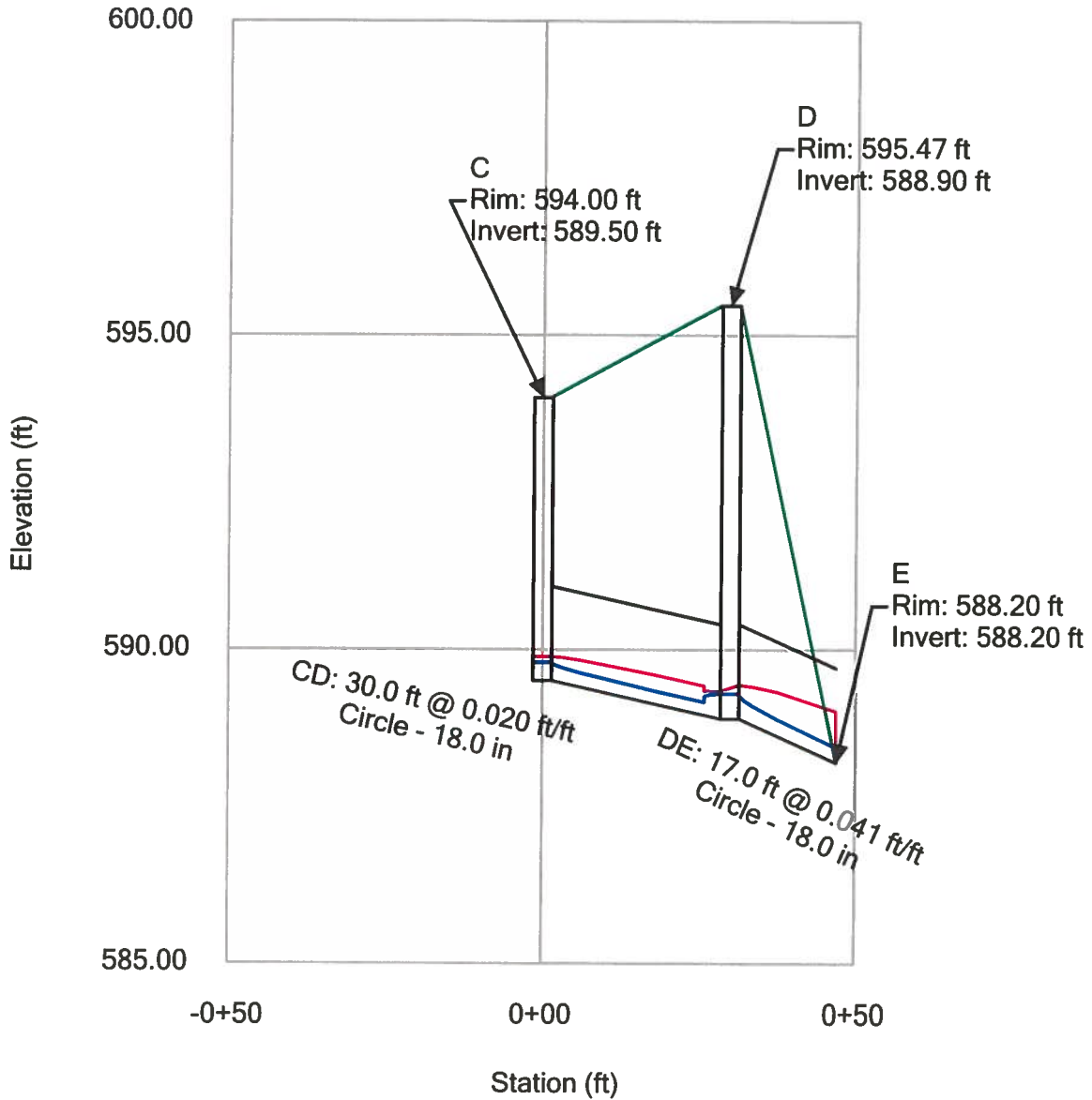
FlexTable: Conduit Table
Active Scenario: 100 YEAR

ID	Label	Start Node	Invert (Start) (ft)	Stop Node	Invert (Stop) (ft)	Length (User Defined) (ft)	Slope (Calculated) (ft/ft)	Diameter (in)	Manning's n	Flow (ft ³ /s)	Velocity (ft/s)	Capacity (Full Flow) (ft ³ /s)	Upstream Structure Energy Grade Line (ft)	Upstream Structure Hydraulic Grade Line (ft)	System Flow Time (min)	System Drainage Area (acres)	System Intensity (in/h)	Notes
38	AB	A	606.00	B	605.40	23.0	0.026	18.0	0.013	1.03	5.30	16.97	606.51	606.38	5.000	0.3	3.290	Q=CA (TYP)
94	LM	L	609.10	M	608.78	65.0	0.005	24.0	0.013	15.71	5.76	15.87	611.31	610.86	10.000	6.6	2.350	
96	MN	M	608.78	N	608.50	54.0	0.005	24.0	0.013	19.04	6.06	16.29	611.03	610.60	10.188	8.1	2.335	
99	JK	J	610.10	K	609.62	9.0	0.053	18.0	0.013	1.29	7.29	24.26	610.68	610.53	5.000	0.4	3.290	
102	CD	C	589.50	D	588.90	30.0	0.020	18.0	0.013	0.60	4.10	14.85	589.89	589.79	5.000	0.2	3.290	
104	DE	D	588.90	E	588.20	17.0	0.041	18.0	0.013	1.12	6.38	21.31	589.34	589.30	5.122	0.3	3.267	
107	FG	F	603.65	G	603.18	23.0	0.020	18.0	0.013	0.90	4.67	15.02	604.13	604.00	5.000	0.3	3.290	
109	GH	G	602.70	H	601.25	27.0	0.054	18.0	0.013	1.52	7.67	24.34	603.50	603.16	5.082	0.5	3.275	
111	HI	H	601.25	I	600.00	23.0	0.054	18.0	0.013	2.37	8.77	24.49	601.92	601.83	5.141	0.7	3.264	

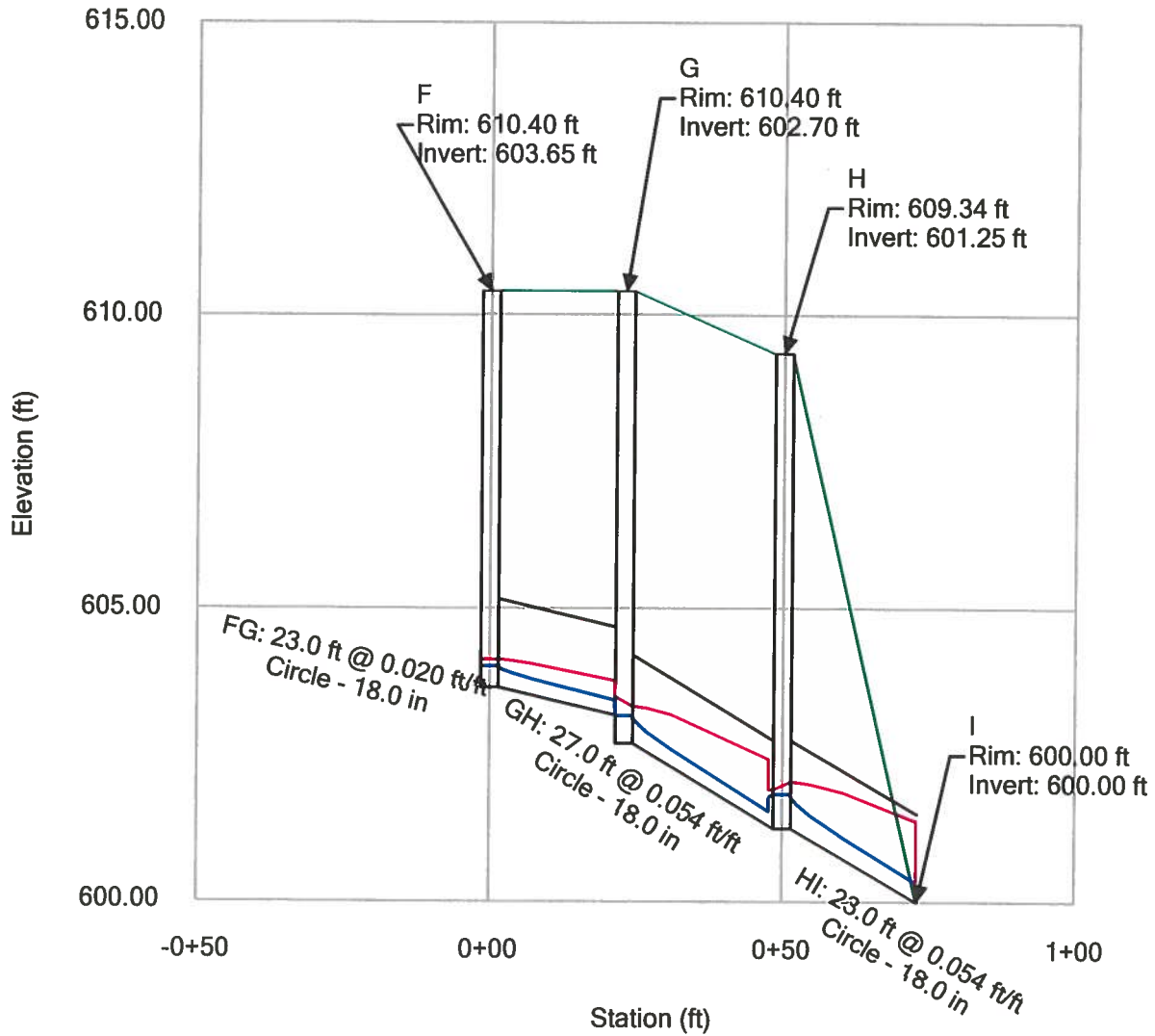
Profile Report
Engineering Profile - A-B (052015 STORM DRAINS.stsw)
Active Scenario: 100 YEAR



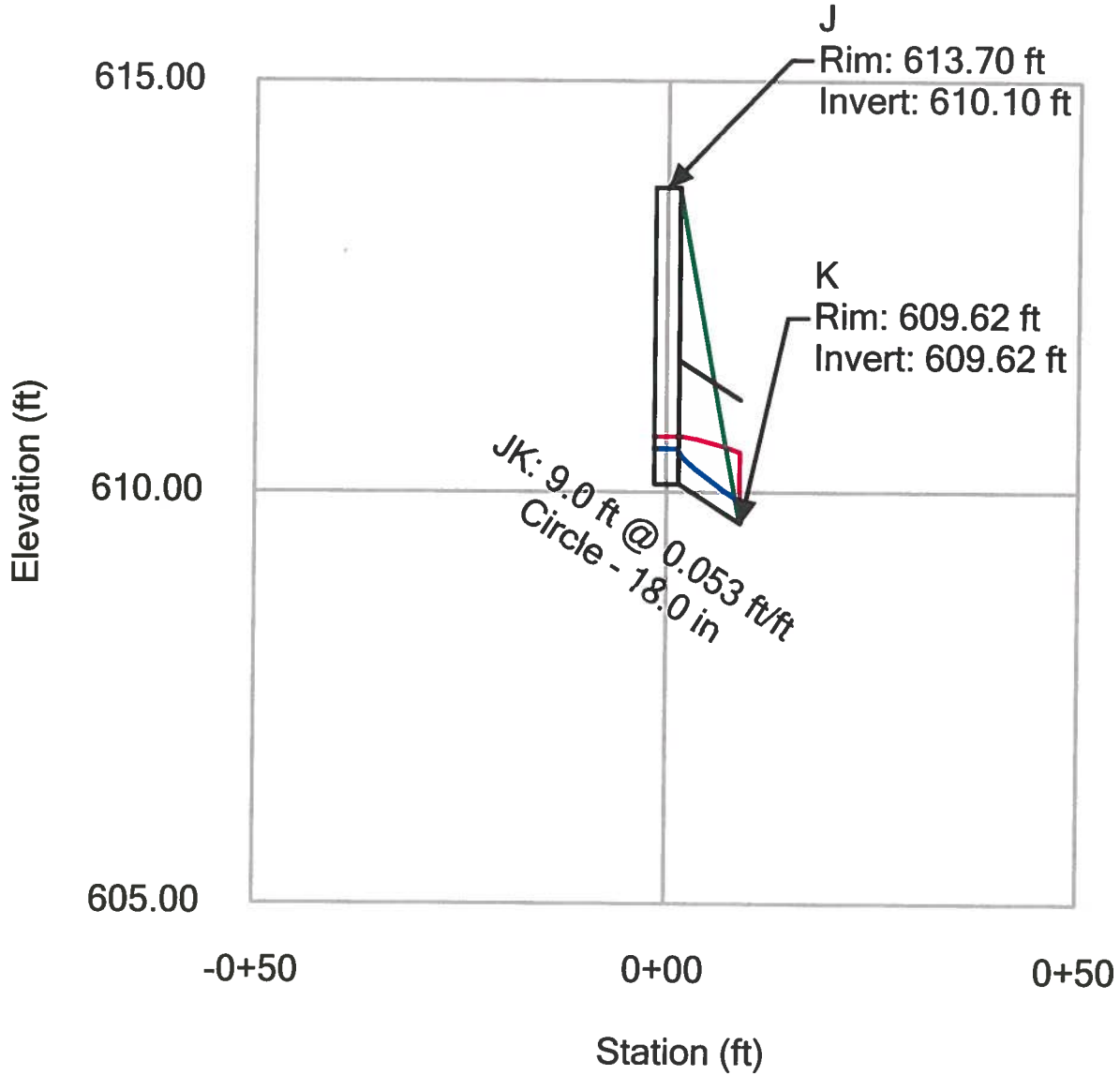
Profile Report
Engineering Profile - C-D-E (052015 STORM DRAINS.stsw)
Active Scenario: 100 YEAR



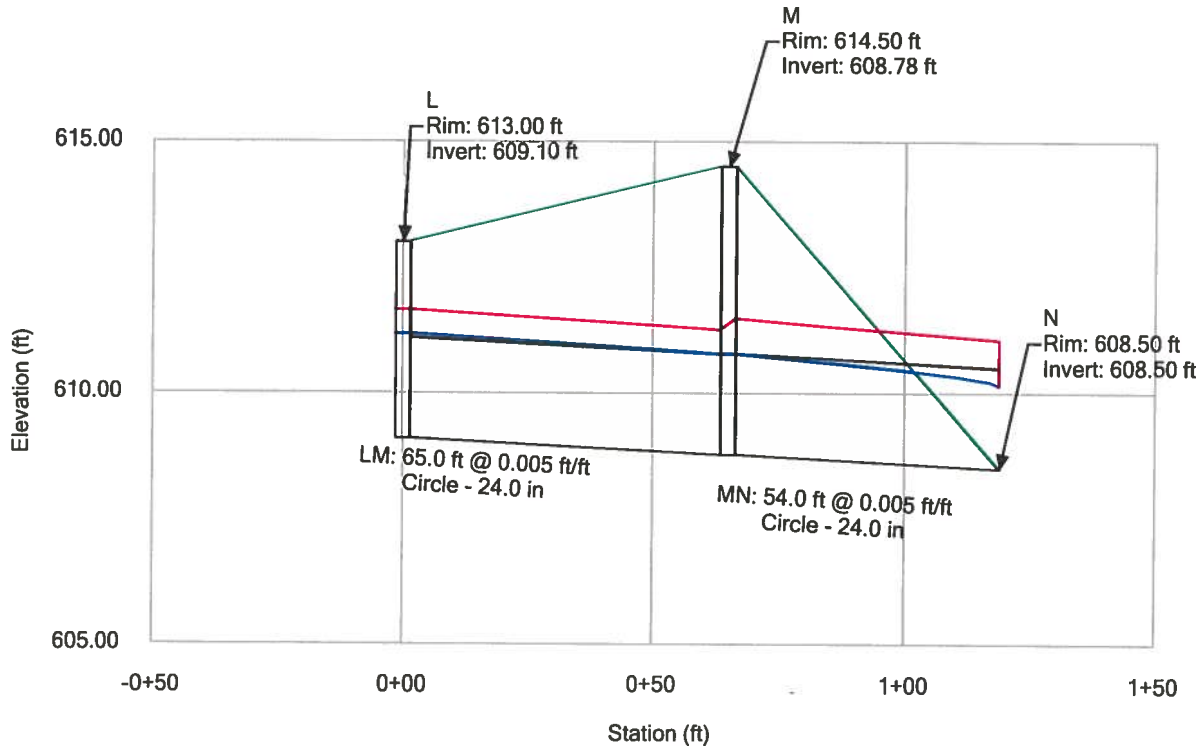
Profile Report
Engineering Profile - F-G-H-I (052015 STORM DRAINS.stsw)
Active Scenario: 100 YEAR



Profile Report
Engineering Profile - J-K (052015 STORM DRAINS.stsw)
Active Scenario: 100 YEAR



Profile Report
Engineering Profile - L-M-N (052015 STORM DRAINS.stsw)
Active Scenario: 100 YEAR



APPENDIX C
Ditch Flow Computations

TABLE C-1

EL DORADO HILLS MEMORY CARE										
DITCH FLOWS										
	SECTION	SLOPE (FT/FT)	A	(AC)	C	TC (MIN)	I (IN/HR)	Q 100 (CFS)	FLOW DEPTH (FT)	FLOW VELOCITY (FT/SEC)
DITCH #1; UP	rock-lined V- ditch; 2:1 sides	0.01	0.55	1	1	5	3.34	1.8	0.68	1.9
DITCH# 1; MID	"	0.05						"	0.51	3.5
DITCH #1; DWN	"	0.37						"	0.35	4.4
DITCH 2	rock-lined V- ditch; 2:1 sides	0.017	0.31	1	1	5	3.34	1.0	0.5	2

Worksheet for ROCK-LINED DITCH #1-UP

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.01000	ft/ft
Left Side Slope	2.00	ft/ft (H:V)
Right Side Slope	2.00	ft/ft (H:V)
Bottom Width	0.00	ft
Discharge	1.80	ft ³ /s

Results

Normal Depth	0.68	ft
Flow Area	0.93	ft ²
Wetted Perimeter	3.06	ft
Hydraulic Radius	0.31	ft
Top Width	2.73	ft
Critical Depth	0.55	ft
Critical Slope	0.03186	ft/ft
Velocity	1.93	ft/s
Velocity Head	0.06	ft
Specific Energy	0.74	ft
Froude Number	0.58	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.68	ft
Critical Depth	0.55	ft
Channel Slope	0.01000	ft/ft

Worksheet for ROCK-LINED DITCH #1-MID

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.05000	ft/ft
Left Side Slope	2.00	ft/ft (H:V)
Right Side Slope	2.00	ft/ft (H:V)
Bottom Width	0.00	ft
Discharge	1.80	ft ³ /s

Results

Normal Depth	0.51	ft
Flow Area	0.51	ft ²
Wetted Perimeter	2.26	ft
Hydraulic Radius	0.23	ft
Top Width	2.02	ft
Critical Depth	0.55	ft
Critical Slope	0.03185	ft/ft
Velocity	3.52	ft/s
Velocity Head	0.19	ft
Specific Energy	0.70	ft
Froude Number	1.23	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.51	ft
Critical Depth	0.55	ft
Channel Slope	0.05000	ft/ft

Worksheet for ROCK-LINED DITCH #1-DWN

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.37000	ft/ft
Left Side Slope	2.00	ft/ft (H:V)
Right Side Slope	2.00	ft/ft (H:V)
Bottom Width	0.00	ft
Discharge	1.80	ft ³ /s

Results

Normal Depth	0.35	ft
Flow Area	0.24	ft ²
Wetted Perimeter	1.55	ft
Hydraulic Radius	0.16	ft
Top Width	1.39	ft
Critical Depth	0.55	ft
Critical Slope	0.03185	ft/ft
Velocity	7.45	ft/s
Velocity Head	0.86	ft
Specific Energy	1.21	ft
Froude Number	3.15	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.35	ft
Critical Depth	0.55	ft
Channel Slope	0.37000	ft/ft

Worksheet for ROCK LINED DITCH #2

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.01700	ft/ft
Left Side Slope	2.00	ft/ft (H:V)
Right Side Slope	2.00	ft/ft (H:V)
Discharge	1.00	ft ³ /s

Results

Normal Depth	0.50	ft
Flow Area	0.49	ft ²
Wetted Perimeter	2.22	ft
Hydraulic Radius	0.22	ft
Top Width	1.99	ft
Critical Depth	0.43	ft
Critical Slope	0.03445	ft/ft
Velocity	2.03	ft/s
Velocity Head	0.06	ft
Specific Energy	0.56	ft
Froude Number	0.72	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.50	ft
Critical Depth	0.43	ft
Channel Slope	0.01700	ft/ft
Critical Slope	0.03445	ft/ft

Table 6.3.1 Permissible Velocity Guidelines

Material	Permissible Velocity (ft/sec)
1. Fine sand, colloidal	2.5
2. Ordinary firm loam	3.5
3. Stiff clay, very colloidal	5.0
4. Fine gravel	5.0
5. Graded loam to cobbles	5.0
6. Coarse gravel, noncolloidal / R.I.P.R.A.P.	6.0
7. Shales and hardpans	6.0
8. Tall Fescue or similar light grasses on easily erodible soil	3.0
9. Same as above on erosion-resistant soils	5.0
10. Ordinary grass mixtures on easily erodible soils	4.0
11. Same as above on erosion-resistant soils	5.0
12. Heavy grass such as Bermuda on easily erodible soils	6.0
13. Same as above on erosion-resistant soils	8.0
14. Unreinforced concrete	10
15. Reinforced concrete	25
16. Grouted riprap	10
17. UngROUTED riprap	See Sec. 6.3.11
18. Gabions	Manufacturer's guidelines

←
 V IN ALL SECTIONS
 4.5 FPS

APPENDIX D
Culvert Flows

(EX) CULVERT @ 100

FlexTable: Catchment Table
Active Scenario: 100 YEAR

ID	Label	Outflow Element	Area (User Defined) (acres)	Rational C	Time of Concentration (min)	Flow (Total Out) (ft ³ /s)	Notes
54	SHED A	A	0.310	1.000	5.000	1.04	
112	SHED F	F	0.270	1.000	5.000	0.91	
113	SHED G2	G	0.160	1.000	5.000	0.54	
114	SHED H	H	0.260	1.000	5.000	0.88	
115	SHED J1	J	0.200	1.000	5.000	0.67	
116	OFF	M	5.800	1.000	10.000	15.38	EST OFFSITE AREA
117	SHED L1	L	0.160	1.000	5.000	0.54	
118	SHED M	M	0.860	1.000	5.000	2.28	
119	SHED C	C	0.180	1.000	5.000	0.61	
120	SHED D	D	0.160	1.000	5.000	0.54	
121	SHED I2	L	0.670	1.000	5.000	2.26	
122	SHED J2	J	0.190	1.000	5.000	0.64	
123	SHED G1	G	0.030	1.000	5.000	0.10	
130	MOFF	M	0.600	1.000	5.000	1.59	FRANCISCO DR

CULVERT AREA

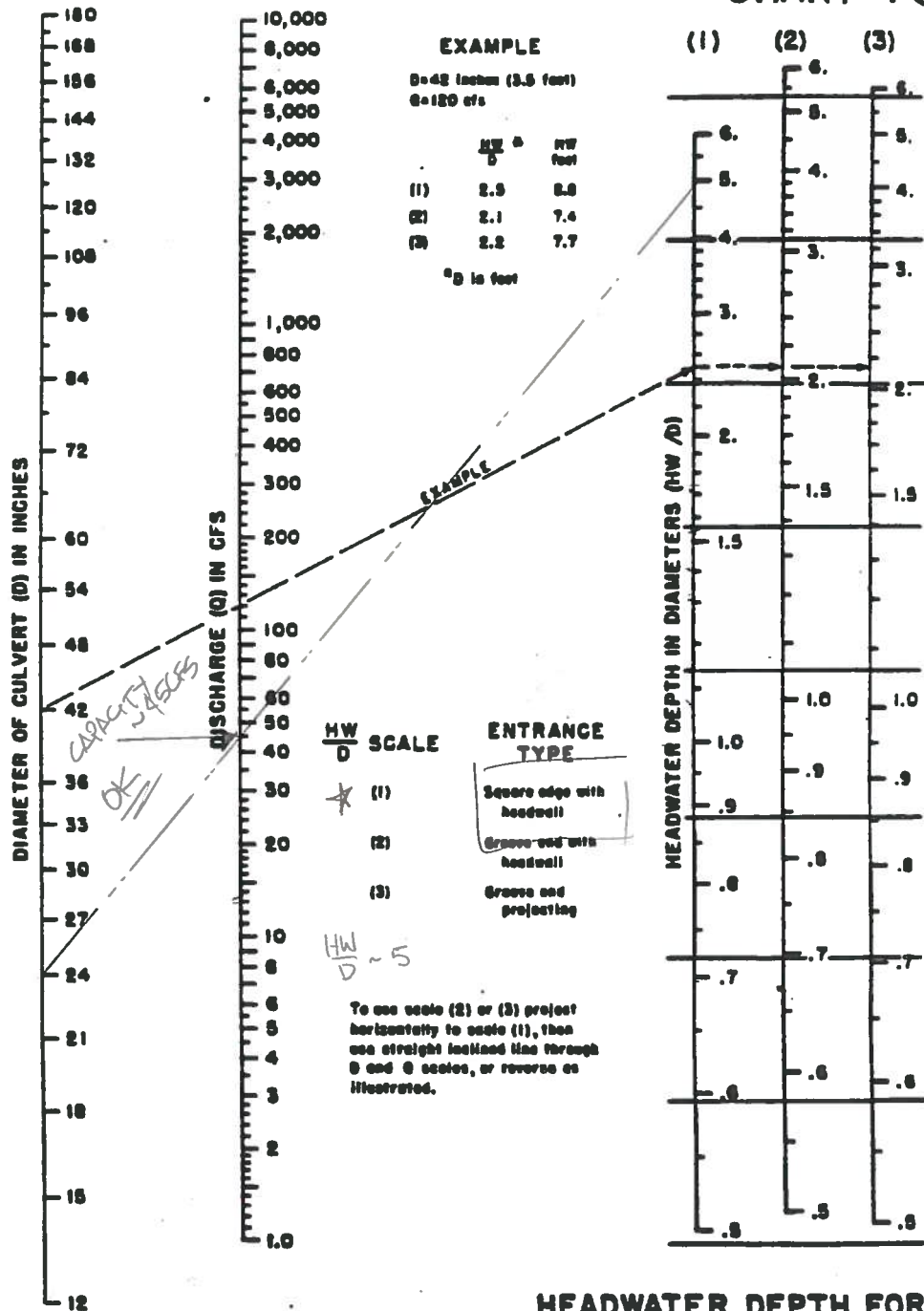
$Z = 8.48 \text{ AC}$

$T_c = 10 \text{ MIN} ; i_{100} = 2.4 \text{ "/HR}$

$\Rightarrow Q_{100} \sim 20 \text{ CFS}$

SEE CULVERT CHART THAT FOLLOWS CAPACITY $\sim 45 \text{ CFS} \Rightarrow \text{OK}$

CHART 1



HDPE: SMOOTH WALLS
 HEADWATER SCALES 283
 REVISED MAY 1964

HEADWATER DEPTH FOR CONCRETE PIPE CULVERTS WITH INLET CONTROL

BUREAU OF PUBLIC ROADS JAN 1963

ESTIMATED Q₁₀₀ OUTD SITE @ PROPOSED BOX CULVERT

A_N 34.2 AC (FROM USGS TOPO)

UNDERLYING SOILS: AUBURN

HYDROLOGIC SOIL GROUP D

LAND USE (BY INSPECTION - GOOGLE EARTH) =
COMMERCIAL / RESIDENTIAL => USE CN = 94

MINIMAL OVERLAND RUNOFF => USE T₊ = 20 MIN; LAG = 12 MIN.

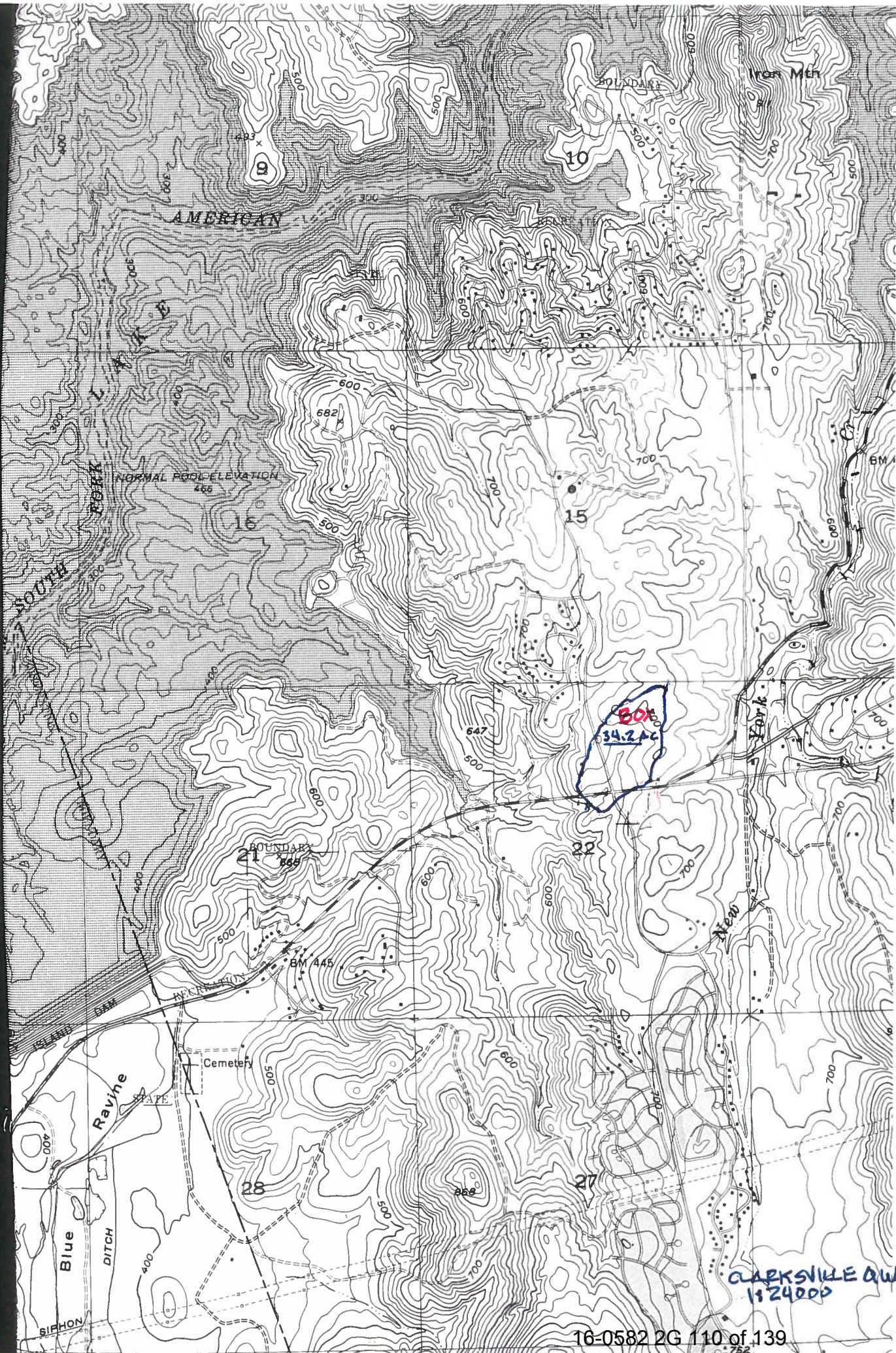
MAP ~ 25" => 24 HR, 100%R DEPTH ~ 4.56"

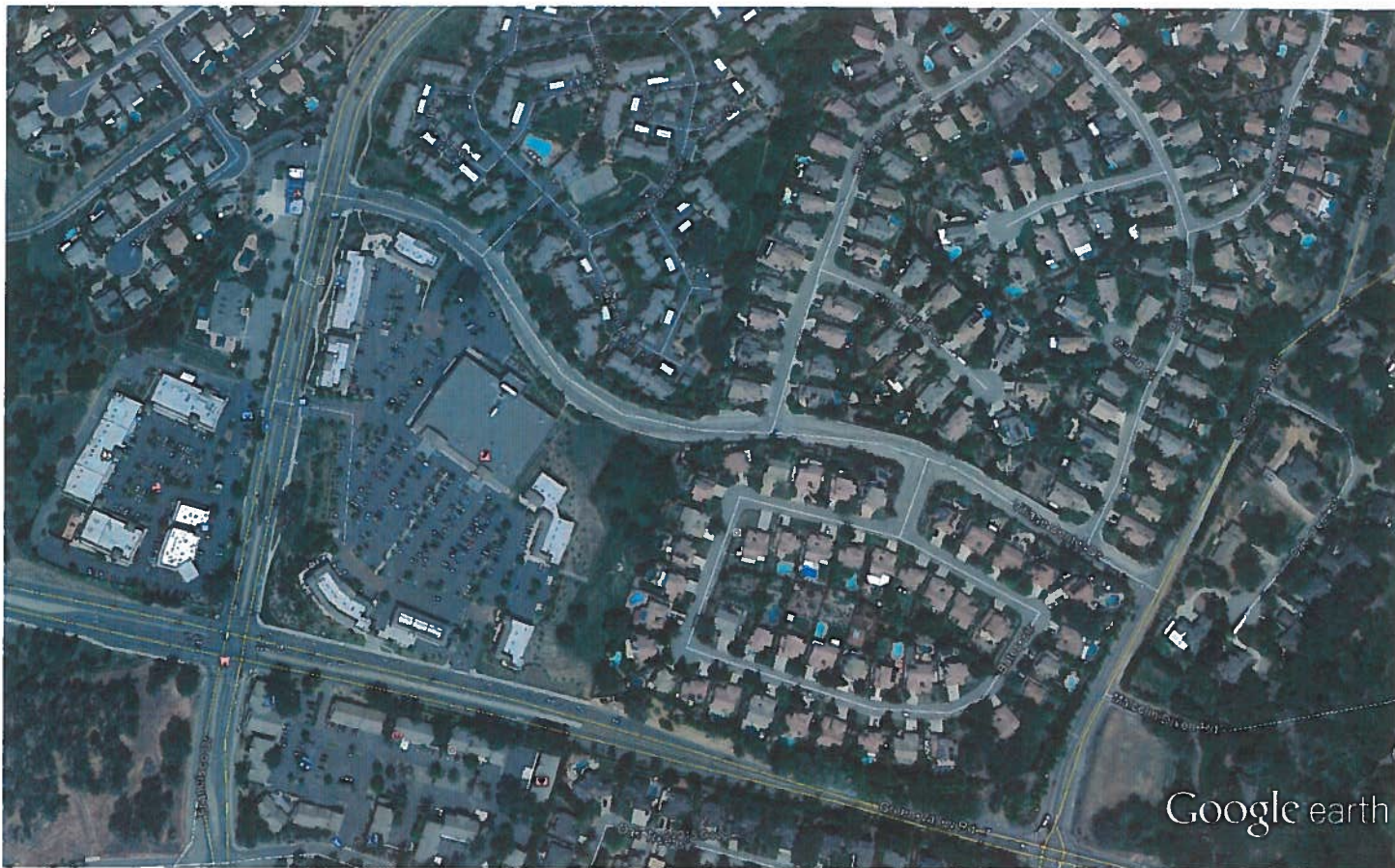
=> Q₁₀₀ ~ 76 CFS (SEE HEC-HMS ATTACHMENT)

OK // FLOW @ INVERTED BOX CULVERT -> SEE FLOWMASTER CALCS (ATTACHED)

24x4 INV. BOX

42-381 50 SHEETS EYE-EGSE™ - 5 SQUARES
42-382 100 SHEETS EYE-EGSE™ - 5 SQUARES
42-383 200 SHEETS EYE-EGSE™ - 5 SQUARES
National Brand





Google earth



Project: EDH MEMORY CARE Simulation Run: Q100

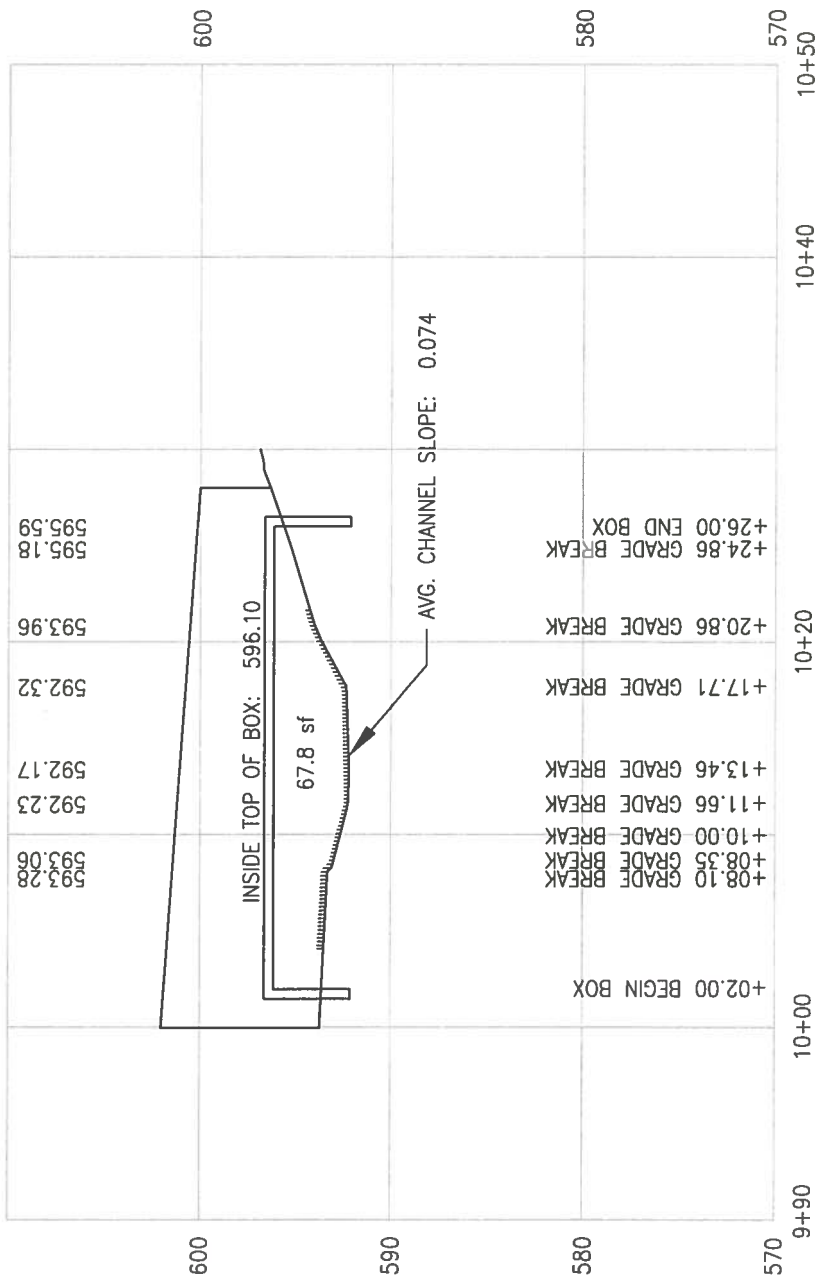
Subbasin: OFF

Start of Run: 31Dec2015, 00:00 Basin Model: OFFSITE
End of Run: 01Jan2016, 00:10 Meteorologic Model: 100 YR
Compute Time: 22Apr2015, 15:00:01 Control Specifications: Control 1

Volume Units: (ft)

Computed Results

Peak Discharge: 76.0 (CFS) Date/Time of Peak Discharge: 31Dec2015, 10:04
Precipitation Volume: 4.56 (ft) Direct Runoff Volume: 3.87 (ft)
Loss Volume: 0.69 (ft) Baseflow Volume: 0.00 (ft)
Excess Volume: 3.87 (ft) Discharge Volume: 3.87 (ft)



West Headwall

Q100 @ INVERTED BOX CULVERT

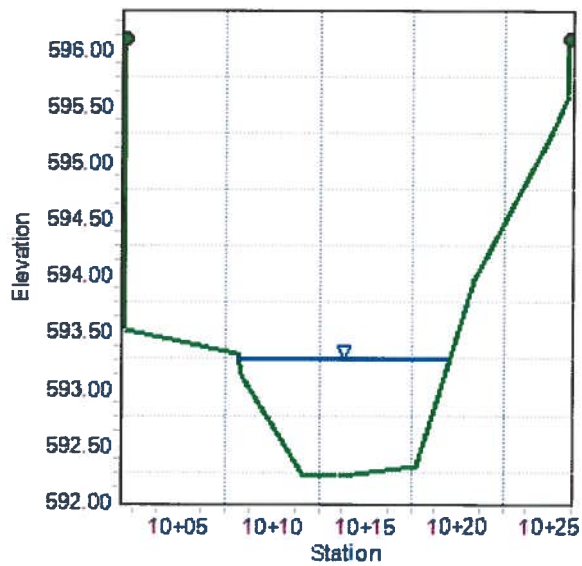
Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.07400 ft/ft
Normal Depth 1.05 ft
Discharge 76.00 ft³/s

Cross Section Image



Q100 @ INVERTED BOX

Results

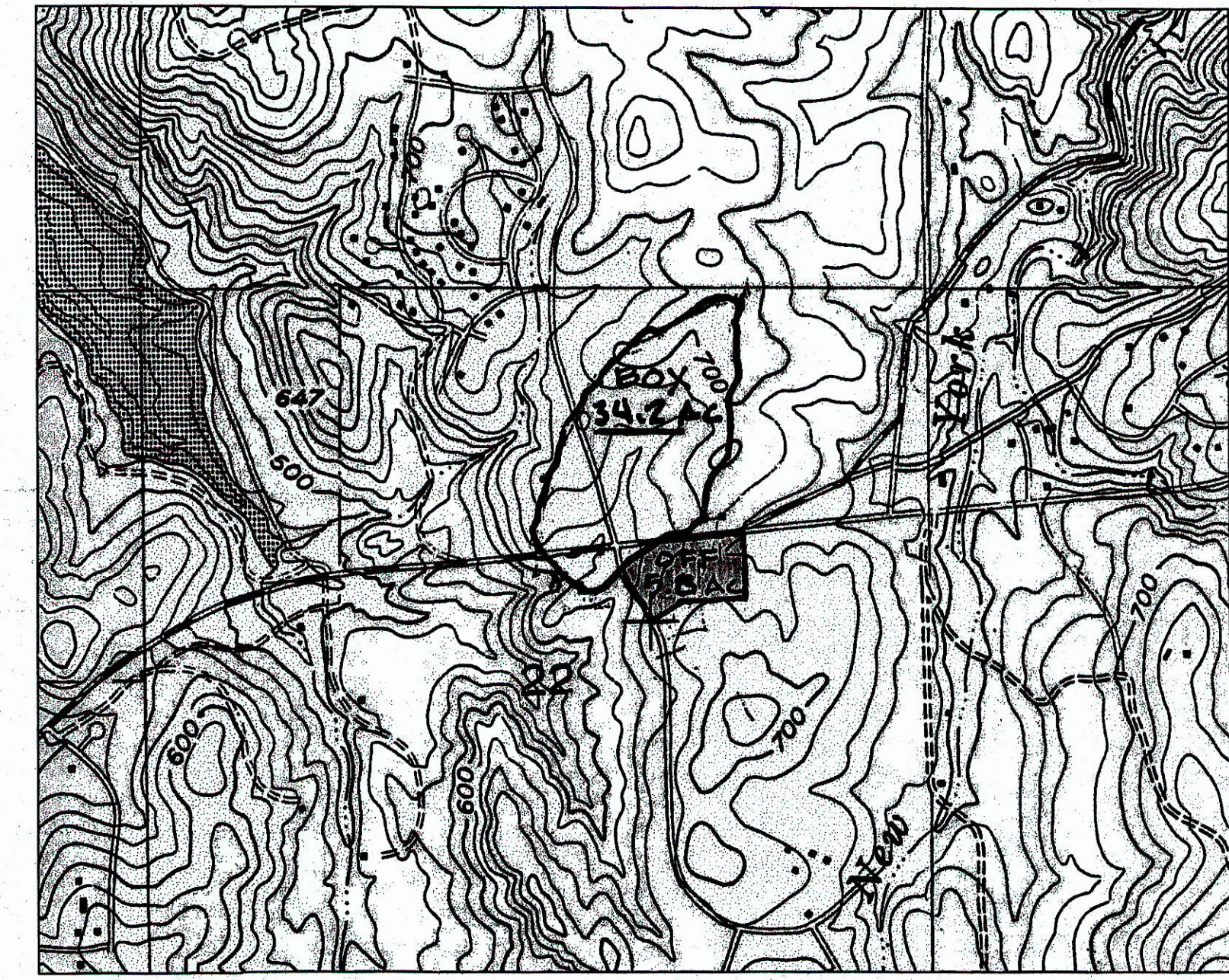
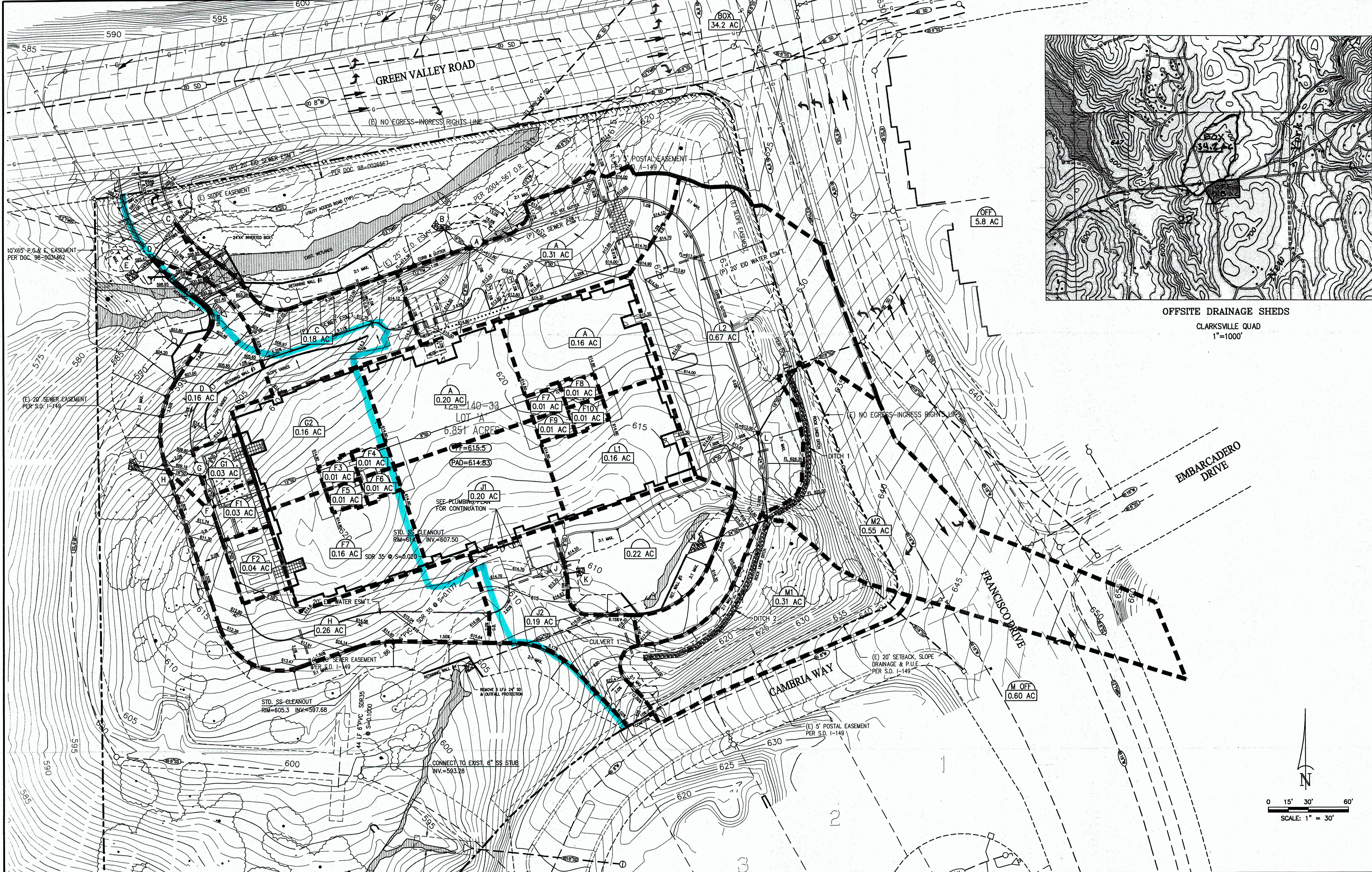
Flow Area	8.99	ft ²
Wetted Perimeter	11.76	ft
Hydraulic Radius	0.76	ft
Top Width	11.35	ft
Normal Depth	1.05	ft
Critical Depth	1.43	ft
Critical Slope	0.02616	ft/ft
Velocity	8.45	ft/s
Velocity Head	1.11	ft
Specific Energy	2.16	ft
Froude Number	1.67	
Flow Type	Supercritical	

GVF Input Data

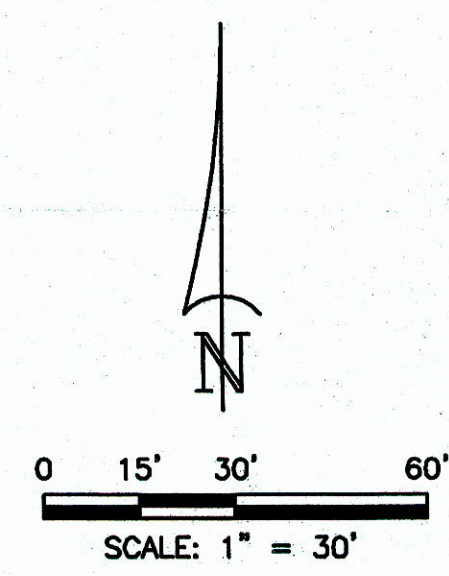
Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.05	ft
Critical Depth	1.43	ft
Channel Slope	0.07400	ft/ft
Critical Slope	0.02616	ft/ft



OFFSITE DRAINAGE SHEDS
CLARKSVILLE QUAD
1"=1000'



NUMBER	DESCRIPTION	BY	DATE

DRAWN BY: GC
 DESIGNED BY: RF, GC
 CHECKED BY: DRC
 SCALE: 1"=30'
 DATE: MAY, 2015 F.B. REF.

cta Engineering & Surveying
 Civil Engineering • Land Surveying • Land Planning
 3233 Monier Circle, Rancho Cordova, CA 95742
 T (916) 838-0919 • F (916) 838-2479 • www.ctaes.net

PREPARED UNDER THE DIRECTION OF:
 DAVID R. CROSARIOL DATE:

IMPROVEMENT PLANS FOR:
EL DORADO HILLS MEMORY CARE
 DRAINAGE SHED MAP

SHEET
1
 OF
1
 JOB NO. 15-002-001
 CALIFORNIA 16-0002-26 11/7/07 159



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January 14, 2017

Mr. Jeremy Sutter
Director, Entitlements
JD+A Architects
5905 Granite Lake Drive, Suite 140
Granite Bay, CA 95746

Subject: El Dorado County Assisted Living and Memory Care Revised Site Plan (Site Plan Dated January 2017) Analysis of Noise Impacts

Dear Mr. Sutter:

On May 5, 2015, j.c. brennan & associates, Inc. submitted an Environmental Noise Assessment prepared for the El Dorado Hills Assisted Living and Memory Care project (**Environmental Noise Assessment, El Dorado Hills Memory Care, El Dorado County CA. Prepared by Jim Brennan, President, j.c. brennan & associates, Inc., May 2015**). The environmental noise assessment evaluated existing ambient noise levels, existing and future traffic noise levels, trash pick-up noise generation, and truck delivery noise generation at the project site in accordance with the El Dorado County General Plan Noise Element. j.c. brennan & associates, Inc. concluded that project would comply with the El Dorado County exterior noise level criteria provided that air conditioning should be included in all residences to allow occupants to close doors and windows as desired for acoustical isolation.

The project was subsequently divided into Phases 1 and 2, and El Dorado County approved Phase 1. Although the Environmental Noise Assessment included the entire development, the El Dorado County staff has requested that j.c. brennan & associates, Inc. provide a letter summarizing the previous analysis and determining if the Phase 2 portion of the project site complies with the El Dorado County General Plan Noise Element, and the recently adopted El Dorado County Title 130 Zoning Ordinance. On August 11, 2016, j.c. brennan & associates, Inc. conducted an additional analysis for the Phase 2 portion of the project site in the form of a technical noise analysis memorandum.

The Phase 2 of the project was determined to comply with the El Dorado County General Plan Noise Element and the El Dorado County Title 130 Zoning Ordinance provided that the following noise control measures are implemented:

- Air conditioning should be included in all residences to allow occupants to close doors and windows as desired for acoustical isolation.

ATTACHMENT S

- Trash pickup should be restricted to the hours of 7:00 a.m. to 7:00 p.m.

Since the Phase 2 analysis was completed, a revised site plan has been developed. The revised site plan is shown on Figure 1. The major changes are summarized as follows:

1. Eliminating the entrance to the site off of east-bound Green Valley Road;
2. Including a new entrance to the site on Francisco Drive;
3. Garbage and deliveries will be instructed to enter at the Francisco Drive entrance and exit on Cambria Way.

Based upon the changes to the site plan, it is expected that noise levels will decrease at the residences adjacent to Cambria Way due to the fact that deliveries and refuse pickup will only utilize Cambria Way when exiting the site. Previously the majority of deliveries and refuse pickup would have utilized Cambria Way while entering and exiting the site. The previous site plan which included the Green Valley Road entrance only allowed visitors coming from the west to utilize this entrance. The revised site plan which has the Francisco Drive entrance allows for more visitors which come from the west, east and north to utilize this entrance, rather than utilizing Cambria Way.

Although a detailed analysis of the trip generation and traffic assignment has not been conducted, it is reasonable to assume that overall traffic on Cambria Way, where the most affected residences are located, will decrease and the overall traffic noise levels will decrease.

It is recommended that the noise control measures which are included in the Phase 2 analysis are included in the project design and operating procedures.

If you have any questions, please contact me at 530-823-0960 or jbrennan@jcbrennanassoc.com.

Respectfully submitted,

j.c. brennan & associates, Inc.

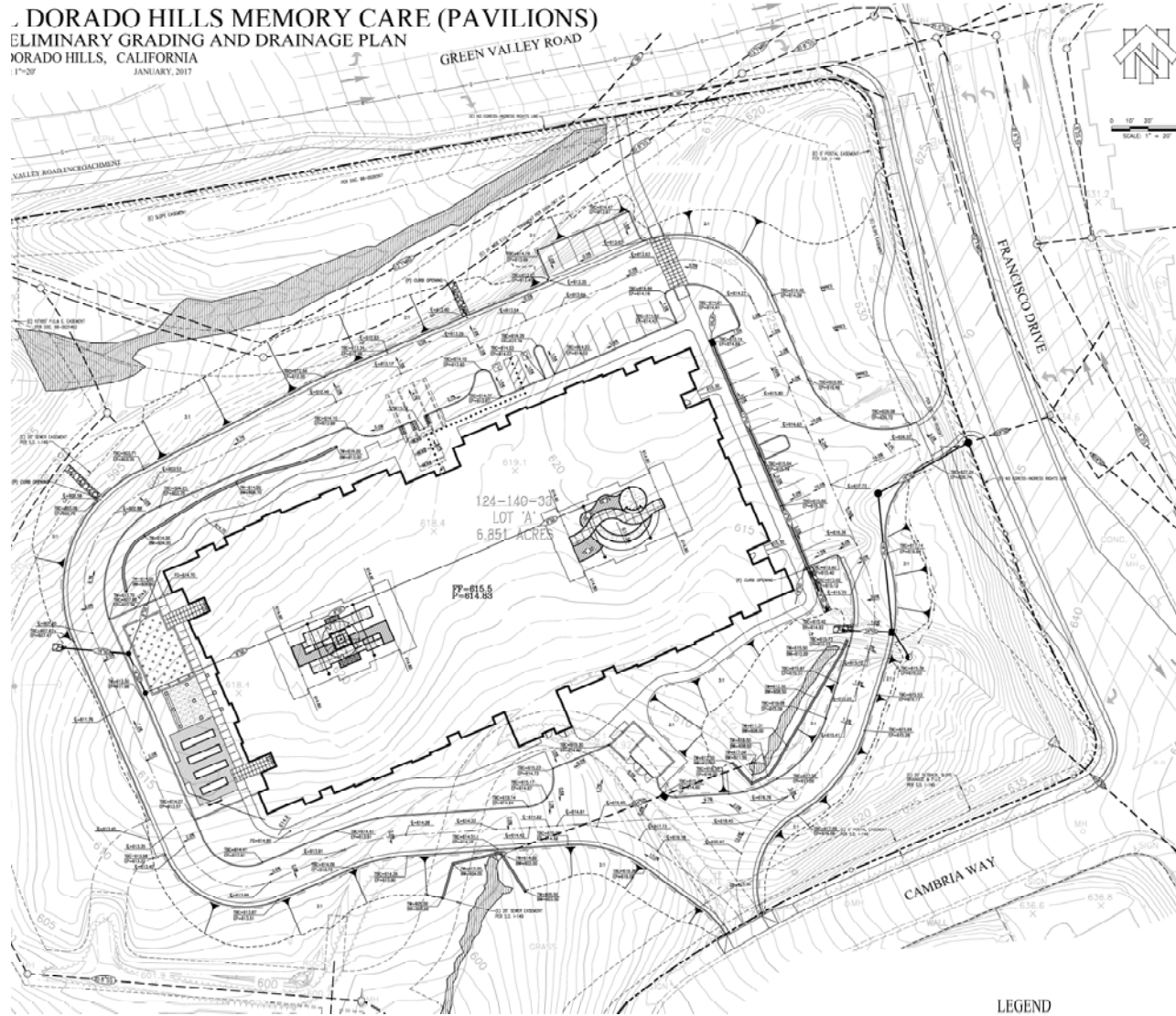


Jim Brennan
President

Member: Institute of Noise Control Engineering

file: 2016-179 – El Dorado Hills Assisted Living Revised Site Plan - January 2017

EL DORADO HILLS MEMORY CARE (PAVILIONS)
ELIMINARY GRADING AND DRAINAGE PLAN
EL DORADO HILLS, CALIFORNIA
1"=20' JANUARY, 2017



LEGEND

El Dorado Hills Assisted Living Revised Site Plan – January 2017

Figure: 1 - Site Plan

 j.c. brennan & associates
consultants in acoustics

Figure Prepared: January 2017

Environmental Noise Assessment

El Dorado Hills Memory Care

El Dorado County, California

Job # 2015-142

Prepared For:

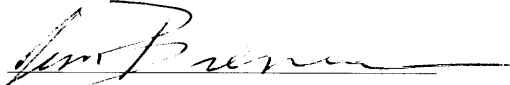
Sierra Capital Investments

7225 North First Street, Suite 101
Fresno, CA 93720

Attn: Mr. Brian Glover

Prepared By:

j.c. brennan & associates, Inc.



Jim Brennan
President
Member, Institute of Noise Control Engineering

May 7, 2015



INTRODUCTION

The proposed Memory Health Care Project is located at the southwest corner of Green Valley Road and Francisco Drive, within the El Dorado Hills area of El Dorado County, California. The project is just under 5 acres in size, and includes a 64 bed healthcare facility with 30 parking spaces. Figure 1, shows the project site plan.

This report will address the potential of the proposed project to be exposed to noise levels exceeding the applicable El Dorado County exterior and interior noise level standards.

Traffic on Green Valley Road and Francisco Drive has been identified as a potentially significant noise source which may affect the project design. In addition, this report will address potential noise levels associated with trash pick-up and deliveries at the project site.

This noise study is being conducted to determine compliance with the applicable noise level standards.

ENVIRONMENTAL SETTING

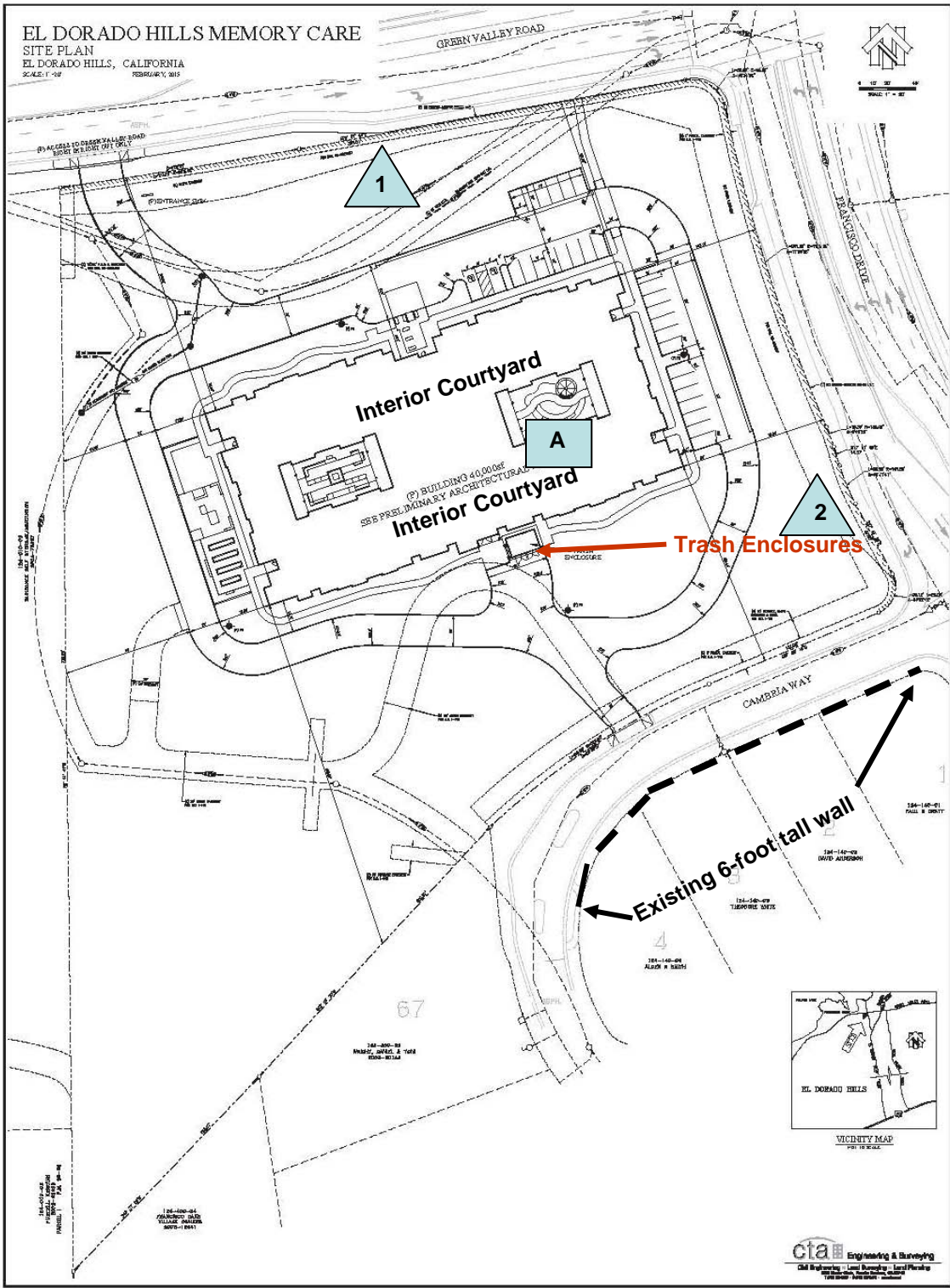
Fundamentals of Acoustics

Acoustics is the science of sound. Sound may be thought of as mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough (at least 20 times per second), then they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second or Hertz (Hz).

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 dBA. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dBA, and changes in levels (dBA) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels, unless otherwise noted.



- Ambient Noise Measurement Site
- Traffic Noise Measurement Sites

j.c. brennan & associates
 consultants in acoustics

The decibel scale is logarithmic, not linear. In other words, two sound levels 10 dBA apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70 dBA sound is half as loud as an 80 dBA sound, and twice as loud as a 60 dBA sound.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool is the average, or equivalent, sound level (L_{eq}), which corresponds to a steady-state A weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptor, L_{dn} , and shows very good correlation with community response to noise.

The day/night average level (L_{dn}) is based upon the average noise level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Table 1 lists several examples of the noise levels associated with common situations. Appendix A provides a summary of acoustical terms used in this report.

**TABLE 1
TYPICAL NOISE LEVELS**

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	--110--	Rock Band
Jet Fly-over at 300 m (1,000 ft)	--100--	
Gas Lawn Mower at 1 m (3 ft)	--90--	
Diesel Truck at 15 m (50 ft), at 80 km/hr (50 mph)	--80--	Food Blender at 1 m (3 ft) Garbage Disposal at 1 m (3 ft)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 m (100 ft)	--70--	Vacuum Cleaner at 3 m (10 ft)
Commercial Area Heavy Traffic at 90 m (300 ft)	--60--	Normal Speech at 1 m (3 ft)
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing

Source: Caltrans, Technical Noise Supplement, Traffic Noise Analysis Protocol. November, 2009.

Effects of Noise on People

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as hearing loss or sudden startling

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and

dissatisfaction. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3 dBA change is considered a just-perceivable difference;
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10 dBA change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6 dBA per doubling of distance from the source, depending on environmental conditions (i.e. atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

REGULATORY CONTEXT

Transportation Noise

The El Dorado County General Plan Noise Element establishes exterior and interior noise level standards for a variety of land uses affected by transportation noise sources. The El Dorado County Noise Element noise standards which would be applicable to this project are provided in Table 2. The criteria in Table 2 are applied at the outdoor activity area and interior spaces of residential, hospital and nursing homes land uses.

Table 2 El Dorado County General Plan Noise Element Standards Applicable at Residential, Hospital and Nursing Homes Land Uses for Transportation Noise Sources		
Land Use	Outdoor Activity Areas	Interior Spaces
Residential	60 dB Ldn ¹	45 dB Ldn
Source: Table 6-1 of the El Dorado County General Plan.		

Table 6-1 of the El Dorado County Noise Element establishes an exterior noise level criterion of 60 dB Ldn at the outdoor activity area of residential land uses impacted by transportation noise sources. Where it is not possible to reduce noise in outdoor activity areas to 60 dB Ldn or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB Ldn may be allowed provided that available exterior noise level reduction measures have been implemented. In addition, an interior noise level criterion of 45 dB Ldn is applied to all residential land uses.

Non-Transportation Noise

The El Dorado County General Plan Noise Element also contains goals and standards for non-transportation noise affecting noise-sensitive receptors.

Goal 6.5: ACCEPTABLE NOISE LEVELS

Ensure that County residents are not subjected to noise beyond acceptable levels.

Objective 6.5.1 PROTECTION OF NOISE-SENSITIVE DEVELOPMENT

Protect existing noise-sensitive developments (e.g. hospitals, schools, churches and residential) from new uses that would generate noise levels incompatible with those uses and, conversely, discourage noise-sensitive uses from locating near sources of high noise levels.

Policy 6.5.1.2

Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of Table 6-2 for noise-sensitive uses.

Policy 6.5.1.12 When determining the significance of impacts and appropriate mitigation for new development projects, the following criteria shall be taken into consideration.

A. Where existing or projected future traffic noise levels are less than 60 dBA Ldn at the outdoor activity areas of residential uses, an increase of more than 5 dBA Ldn caused by a new transportation noise source will be considered significant;

B. Where existing or projected future traffic noise levels range between 60 and 65 dBA Ldn at the outdoor activity areas of residential uses, an increase of more than 3 dBA Ldn caused by a new transportation noise source will be considered significant; and

C. Where existing or projected future traffic noise levels are greater than 65 dBA Ldn at the outdoor activity areas of residential uses, an increase of more than 1.5 dBA Ldn caused by a new transportation noise will be considered significant.

Policy 6.5.1.13

When determining the significance of impacts and appropriate mitigation to reduce those impacts for new development projects, including ministerial development, the following criteria shall be taken into consideration:

- A. In areas in which ambient noise levels are in accordance with the standards in Table 6-2, increases in ambient noise levels caused by new non-transportation noise sources that exceed 5 dBA shall be considered significant; and
- B. In areas in which ambient noise levels are not in accordance with the standards in Table 6-2, increases in ambient noise levels caused by new non-transportation noise sources that exceed 3 dBA shall be considered significant.

Table 3 Noise Level Performance Protection Standards For Noise Sensitive Land Uses Affected by Non-Transportation Noise Sources						
Noise Level Descriptor	Daytime 7 a.m. - 7 p.m.		Evening 7 p.m. - 10 p.m.		Night 10 p.m. - 7 a.m.	
	Community	Rural	Community	Rural	Community	Rural
Hourly L_{eq} , dB	55	50	50	45	45	40
L_{max} , dB	70	60	60	55	55	50

Each of the noise levels specified above shall be lowered by five dB for simple noises, noises consisting primarily of speech or music, or for recurring impulsive noises.

County can impose noise level standards which are up to 5 dB less than those specified above based upon determination of existing low ambient noise levels in the vicinity of the project site.

In Community areas the exterior noise level standard shall be applied to the property line of the receiving property. In Rural areas the exterior noise level shall be applied at a point 100 feet away from the residence.

Source: Table 6-2 of the El Dorado County General Plan.

The noise standards in Table 3 are divided into daytime hours (7 am to 7 pm), evening hours (7 pm to 10 pm), and nighttime hours (10 pm to 7 am).

EXISTING CONDITIONS

The existing noise environment in the proposed project area is defined primarily by traffic on Francisco Drive and Green Valley Road. Francisco Drive is located adjacent to the east side of the project site, and Green Valley Road is located adjacent to the north side of the project site.

EXISTING AMBIENT NOISE LEVELS

To quantify the existing ambient noise environment in the project vicinity, j.c. brennan & associates Inc. conducted two sets of short-term hourly noise level measurements on the project site, on May 2nd, 2015.

The noise measurement location is shown on Figure 1. A summary of the noise level measurement survey results is provided in Table 4.

Equipment used for the noise measurement survey included a Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meter. The meter was calibrated before and after use with an LDL Model CAL200 acoustical calibrator to ensure the accuracy of the

measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

TABLE 4 SUMMARY OF EXISTING BACKGROUND NOISE MEASUREMENT DATA					
Site	Date	Average ¹ Measured Hourly Noise Levels, dBA			
		L _{eq}	L ₅₀	L _{max}	Time
Short-term Noise Level Measurements					
A	May 2, 2015	56.0	54	68.5	9:50 a.m.
	May 2, 2015	57.4	55	70.1	12:05 p.m.
Source: j.c. brennan & associates, Inc., 2015					

EVALUATION OF EXISTING AND FUTURE TRAFFIC NOISE LEVELS AT THE PROJECT

Traffic Noise Prediction Methodology

j.c. brennan & associates, Inc., utilizes the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA RD-77-108) for the prediction of traffic noise levels. The model is based upon the CALVENO noise emission factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site.

On May 5th, 2015 j.c. brennan & associates, Inc. conducted short-term noise level measurements and concurrent counts of traffic for Green Valley Road and Francisco Drive on the project site. The purpose of the short-term traffic noise level measurement is to determine the accuracy of the FHWA model in describing the existing noise environment on the project site, while accounting for existing site conditions such as intervening structures, actual travel speeds, and roadway grade. Noise measurement results were compared to the FHWA model results by entering the observed traffic volume, speed, and distance as inputs to the FHWA model. The traffic noise calibration site is shown on Figure 1.

Instrumentation used for the measurement was a Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meter which was calibrated in the field before use with an LDL CAL200 acoustical calibrator. A complete listing of FHWA Model inputs and results are shown in Appendix B. Table 5 shows the results of the traffic noise calibration.

TABLE 5 COMPARISON OF FHWA MODEL TO MEASURED TRAFFIC								
Site	Vehicles			Speed (mph)	Dist. (Feet)*	Measured Leq, dBA	Modeled Leq, dBA**	Difference
	Autos	Med. Trk.	Hvy. Trk.					
Green Valley Road								
1	425	5	0	50	90	68.1	66.3	-1.8
Francisco Drive								
2	175	2	0	40	65	65.1	61.9	-3.2
*The noise measurement location is from the roadway centerline.								
**Acoustically "soft" site assumed								

Based upon the calibration results, the FHWA Model was found to under-predict Green Valley Road traffic by 1.8 dBA, and Francisco Drive traffic by 3.2 dBA. Therefore, +2 dBA and +3 dBA offsets will be added to the FHWA model for predicted future traffic noise levels for Green Valley Road and Francisco Drive, respectively.

Existing and Future Exterior Traffic Noise Levels

To determine the existing future traffic noise levels adjacent to the project site, j.c. brennan & associates, Inc., utilized 2015 and 2025 traffic predictions, both with and without the project. The traffic volumes were provided in traffic impact analysis conducted for the project site by Kimley Horn Associates. Table 6 provides the predicted traffic noise levels.

A complete listing of the FHWA Traffic Noise Prediction Model inputs is provided in Appendix C.

TABLE 6 PREDICTED EXISTING AND FUTURE TRAFFIC NOISE LEVELS				
Scenario	Distance	Predicted Traffic Noise Levels , L _{dn}	Distance to Noise Contours (feet)	
			65 dB Ldn	60 dB Ldn
Green Valley Road (In front of the Project Site)				
Existing (2015)	100 feet	70 dBA	213	459
Existing + Project (2015)	100 feet	70 dBA	213	460
Future (2025)	100 feet	70 dBA	230	495
Future + Project (2025)	100 feet	70 dBA	230	195
Francisco Drive (In front of the Project Site)				
Existing (2015)	100 feet	64 dBA	90	194
Existing + Project (2015)	100 feet	64 dBA	90	195
Future (2025)	100 feet	64 dBA	84	182
Future + Project (2025)	100 feet	64 dBA	85	183
Cambria Way (From Francisco to the Entrance of the Project Site)				
Existing (2015)	50 feet	46 dBA	3	6
Existing + Project (2015)	50 feet	47 dBA	3	7
Future (2025)	50 feet	47 dBA	3	7
Future + Project (2025)	50 feet	48 dBA	4	8
Sources: j.c. brennan & associates, Inc., 2015				

Based upon the predicted future traffic noise levels shown in Table 6, a portion of the project site will exceed the El Dorado County exterior noise level criterion of 60 dB Ldn at a distance of 100 feet from both Green Valley Road and Francisco Drive. However, the nearest building facades are located at a distance of 200 feet from Green Valley Road and 150 feet from Francisco Drive. Therefore, the predicted traffic noise levels from Green Valley Road and Francisco Drive, at the nearest building facades are 65.4 dBA and 61.5 dBA Ldn, respectively. In addition, it is noted that the primary outdoor activity areas are located in the courtyard, which is located in the center of the building and is shielded from both Green Valley Road and Francisco Drive. by the building facades.

The primary outdoor activity areas are located within the interior courtyard of the project. The predicted 2025 + Project traffic noise levels at the primary outdoor activity areas, while accounting for a -10 dBA of shielding from the building facades are 55.5 dBA Ldn, and 51.5 dBA Ldn, associated with Green Valley Road and Francisco Drive, respectively. The cumulative noise level from both roadways would be 57 dBA Ldn. Therefore, the project would comply with the exterior noise level standard of 60 dBA Ldn.

It should also be noted that the project will not result in an exceedance of the 60 dBA Ldn standard at residences adjacent to Cambria Way. The project will also not result in a significant increase in traffic noise levels.

Interior Traffic Noise Levels:

Standard construction practices, consistent with the uniform building code typically provides an exterior-to-interior noise level reduction of approximately 25 dBA, assuming that air conditioning is included for each unit, which allows residents to close windows for the required acoustical isolation. Therefore, the exterior noise levels at the building facades do not exceed 70 dBA Ldn, the interior noise levels will comply with the interior noise level standard of 45 dBA Ldn.

Trash Pick-Up Noise Generation:

As a means of determining the noise levels due to trash pick-up, j.c. brennan & associates, Inc. utilized noise level data collected at a dumpster pick-up at a Safeway Store near the corner of Madison Avenue and Hazel Avenue. Noise measurements were conducted at a distance of approximately 50 feet from the trash enclosure. The normal operations for trash pickup occurs within approximately 1 minute. The normal emptying cycle includes the truck arrival and departure, impacts from the forks on the bin and some shaking of the bin. The noise from the truck idling is approximately 65 dBA. The hydraulic arms were approximately 70 dBA, and the raising of the bin and emptying of the bin were approximately 85 dBA.

Trash pick-up is recognized as a part of upkeep of property and is associated with all development, including the residential development which surrounds the project site.

Based upon the noise level data collected for trash pickup, it appears that a 15 dBA reduction would be required to comply with the noise standards shown in Table 3. The distance from the trash enclosures to the nearest residential property line is 175 feet. Based upon a 20 log attenuation rate, the predicted maximum noise levels would be 75 dBA, and would exceed the noise level standard by 5 dBA.

j.c. brennan & associates, Inc. conducted a barrier analysis to determine the appropriate barrier height to reduce the trash pickup noise levels by 5 dB. The results of the barrier analysis indicated that a 6-foot tall barrier located adjacent to Cambria Way would provide a -5 dBA shielding of the trash pickup noise levels. Based upon field observations, there is currently a 6-foot wall, relative to the back yards currently constructed for the residences adjacent to Cambria Way. The existing walls are shown on Figure 1.

Truck Delivery Noise Generation:

As a means of determining truck delivery noise levels, j.c. brennan & associates, Inc. utilized file data for typical step-side van delivery trucks. It is not anticipated that typical deliveries will occur with tractor trailer trucks. Typical deliveries are not expected to occur during the nighttime hours, and no more than one to two deliveries in an hour during the daytime periods. Based on file data typical medium truck arrivals and departures and unloading are approximately 82 dBA SEL and 75 dBA Lmax at 50 feet. Based upon the data described above, the following formula can be utilized to determine the hourly noise level due to the truck traffic passbys

$$Leq = 82 + 10 * (\log 2) - 35.6, \text{ dBA where:}$$

82 is the mean sound exposure level (SEL) for a medium trucks, and $10 * (\log 2)$ is 10 times the logarithm of the number of truck arrivals and departures during an hour, and 35.6 is 10 times the logarithm of the number seconds in an hour.

Based upon the above formula, the hourly Leq (average) generated during the daytime hour would be 50 dBA Leq and 75 dBA Lmax at 50 feet. The predicted noise levels at the nearest residence across Cambria Way would be 38 dBA Leq and 63 dBA Lmax. Therefore, the truck deliveries are expected to comply with the El Dorado County exterior noise level standards for stationary noise sources.

CONCLUSIONS

The proposed project is expected to comply with the El Dorado County exterior noise level criteria, provided that the following noise control measures are implemented:

- Air conditioning should be included in all residences to allow occupants to close doors and windows as desired for acoustical isolation;

Appendix A

Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.
Ldn	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
Lmax	The highest root-mean-square (RMS) sound level measured over a given period of time.
L(n)	The sound level exceeded a described percentile over a measurement period. For instance, an hourly L50 is the sound level exceeded 50% of the time during the one hour period.
Loudness	A subjective term for the sensation of the magnitude of sound.
Noise	Unwanted sound.
Peak Noise	The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level.
RT₆₀	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 sabin.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.
Impulsive	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
Simple Tone	Any sound which can be judged as audible as a single pitch or set of single pitches.



Appendix B

FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)

Calibration Worksheet

Project Information:

Job Number: 2015-142
Project Name: FHWA Model
Roadway Tested: Green Valley
Test Location: _____
Test Date: May 2, 2015

Weather Conditions:

Temperature (Fahrenheit): 65
Relative Humidity: Dry
Wind Speed and Direction: 10-May
Cloud Cover: Ptly Cloudy

Sound Level Meter:

Sound Level Meter: LDL Model 820
Calibrator: LDL Model CA200
Meter Calibrated: Immediately before and after test
Meter Settings: A-weighted, slow response

Microphone:

Microphone Location: On Project Site
Distance to Centerline (feet): 90
Microphone Height: 5 feet above ground
Intervening Ground (Hard or Soft): **Soft**
Elevation Relative to Road (feet): 12

Roadway Condition:

Pavement Type: Asphalt
Pavement Condition: Good
Number of Lanes: 5
Posted Maximum Speed (mph): 50

Test Parameters:

Test Time: 11:05 a.m.
Test Duration (minutes): 15
Observed Number Automobiles: 425
Observed Number Medium Trucks: 5
Observed Number Heavy Trucks: 0
Observed Average Speed (mph): 50

Model Calibration:

Measured Average Level (L_{eq}): 68.1
Level Predicted by FHWA Model: 66.3

Difference: -1.8 dB

Conclusions:



Appendix B

FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)

Calibration Worksheet

Project Information:

Job Number: 2015-142
Project Name: 2015-142
Roadway Tested: Francisco Drive
Test Location: _____
Test Date: May 2, 2015

Weather Conditions:

Temperature (Fahrenheit): 65
Relative Humidity: Dry
Wind Speed and Direction: 10-May
Cloud Cover: Ptly Cloudy

Sound Level Meter:

Sound Level Meter: LDL Model 820
Calibrator: LDL Model CA200
Meter Calibrated: Immediately before and after test
Meter Settings: A-weighted, slow response

Microphone:

Microphone Location: On Project Site
Distance to Centerline (feet): 65
Microphone Height: 5 feet above ground
Intervening Ground (Hard or Soft): **Soft**
Elevation Relative to Road (feet): 5

Roadway Condition:

Pavement Type: Asphalt
Pavement Condition: Good
Number of Lanes: 3
Posted Maximum Speed (mph): 40

Test Parameters:

Test Time: 10:30 AM
Test Duration (minutes): 15
Observed Number Automobiles: 175
Observed Number Medium Trucks: 2
Observed Number Heavy Trucks: 0
Observed Average Speed (mph): 40

Model Calibration:

Measured Average Level (L_{eq}): 65.1
Level Predicted by FHWA Model: 61.9

Difference: -3.2 dB

Conclusions:



Appendix C

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 2015-142
 Description: El Dorado Hills Memory Care
 Ldn/CNEL: Ldn
 Hard/Soft: Soft

Segment	Roadway Name	Scenario	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Green Valley Road	2015	25,490	85		15	2	1	50	100	2
2	Green Valley Road	2015 + Project	25,540	85		15	2	1	50	100	2
3	Green Valley Road	2025	28,530	85		15	2	1	50	100	2
4	Green Valley Road	2025 + Project	28,580	85		15	2	1	50	100	2
5	Francisco Drive	2015	11,130	85		15	1	0.5	40	100	3
6	Francisco Drive	2015 + Project	11,180	85		15	1	0.5	40	100	3
7	Francisco Drive	2025	10,080	85		15	1	0.5	40	100	3
8	Francisco Drive	2025 + Project	10,130	85		15	1	0.5	40	100	3
9	Cambria Way	2015	380	85		15	0.5	0.5	25	50	
10	Cambria Way	2015 + Project	490	85		15	0.5	0.5	25	50	
11	Cambria Way	2025	450	85		15	0.5	0.5	25	50	
12	Cambria Way	2025 + Project	550	85		15	0.5	0.5	25	50	
13											
14											
15											
16											
17											
18											
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20											
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22											
23											
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25											



Appendix C

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Predicted Levels

Project #: 2015-142
 Description: El Dorado Hills Memory Care
 Ldn/CNEL: Ldn
 Hard/Soft: Soft

Segment	Roadway Name	Scenario	Autos	Medium Trucks	Heavy Trucks	Total
1	Green Valley Road	2015	68.9	59.7	60.8	70
2	Green Valley Road	2015 + Project	68.9	59.7	60.9	70
3	Green Valley Road	2025	69.4	60.1	61.3	70
4	Green Valley Road	2025 + Project	69.4	60.1	61.3	70
5	Francisco Drive	2015	63.5	52.5	54.3	64
6	Francisco Drive	2015 + Project	63.6	52.5	54.4	64
7	Francisco Drive	2025	63.1	52.1	53.9	64
8	Francisco Drive	2025 + Project	63.1	52.1	53.9	64
9	Cambria Way	2015	44.5	33.2	40.8	46
10	Cambria Way	2015 + Project	45.6	34.3	41.9	47
11	Cambria Way	2025	45.3	33.9	41.5	47
12	Cambria Way	2025 + Project	46.1	34.8	42.4	48



Appendix C
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project #: 2015-142
 Description: El Dorado Hills Memory Care
 Ldn/CNEL: Ldn
 Hard/Soft: Soft

Segment	Roadway Name	Scenario	----- Distances to Traffic Noise Contours -----				
			75	70	65	60	55
1	Green Valley Road	2015	46	99	213	459	989
2	Green Valley Road	2015 + Project	46	99	213	460	990
3	Green Valley Road	2025	49	107	230	495	1066
4	Green Valley Road	2025 + Project	50	107	230	495	1067
5	Francisco Drive	2015	19	42	90	194	419
6	Francisco Drive	2015 + Project	19	42	90	195	420
7	Francisco Drive	2025	18	39	84	182	392
8	Francisco Drive	2025 + Project	18	39	85	183	393
9	Cambria Way	2015	1	1	3	6	13
10	Cambria Way	2015 + Project	1	2	3	7	16
11	Cambria Way	2025	1	1	3	7	15
12	Cambria Way	2025 + Project	1	2	4	8	17



Appendix D
Barrier Insertion Loss Calculation

Project Information: Job Number: 2015-142
 Project Name: El Dorado Hills Memory Care
 Location(s): 1

Noise Level Data: Source Description: Trash Pickup
 Source Noise Level, dBA: 75
 Source Frequency (Hz): 1000
 Source Height (ft): 8

Site Geometry: Receiver Description: Nearest Backyard
 Source to Barrier Distance (C₁): 175
 Barrier to Receiver Distance (C₂): 20
 Pad/Ground Elevation at Receiver: 0
 Receiver Elevation¹: 5
 Base of Barrier Elevation: 0
 Starting Barrier Height 6

Barrier Effectiveness:

Top of Barrier Elevation (ft)	Barrier Height (ft)	Insertion Loss, dB	Noise Level, dB	Barrier Breaks Line of Site to Source?
6	6	-5	70	Yes
7	7	-6	69	Yes
8	8	-8	67	Yes
9	9	-9	66	Yes
10	10	-10	65	Yes
11	11	-11	64	Yes
12	12	-13	63	Yes
13	13	-13	62	Yes
14	14	-14	61	Yes
15	15	-15	60	Yes
16	16	-15	60	Yes

Notes: 1. Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s)

