Biological Resources Assessment

El Dorado Springs ±23-Acre Site
El Dorado County, California

Prepared for: Standard Pacific Homes

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Submitted by:

FOOTHILL ASSOCIATES

ATTACHMENT 6

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1.0 EXECUTIVE SUMMARY

Foothill Associates' biologists conducted a biological resources assessment on the El Dorado Springs 23-acre site that occurs within El Dorado County south of Highway 50 and immediately southwest of the intersection of White Rock Road and Stonebriar Drive. The site was surveyed in 2006 and again in 2013. The purpose of this document is to summarize the general biological resources on the site, to assess the suitability of the site to support special-status species and sensitive habitat types, and to provide recommendations for regulatory permitting or further analysis that may be required prior to development activities occurring on the site.

The dominant vegetation community on the site is annual grassland. The surrounding land use and vegetation communities include annual grassland and Highway 50 to the north; single-family residential areas to the east; White Rock Road and single-family residential areas to the south; and annual grassland to the west. Known or potential biological constraints on the site include the following:

- Potential foraging habitat for Swainson's hawk;
- Potential habitat for ground-nesting raptors and other migratory birds; and
- Sensitive habitats (potential waters of the U.S. subject to Section 404 of CWA).

2.0 INTRODUCTION

This report summarizes the findings of a biological resources assessment completed for the ±23-acre El Dorado Springs property located within western El Dorado County, California. This document addresses the onsite physical features, as well as plant communities present and the common plant and wildlife species occurring, or potentially occurring on the site. Furthermore, the suitability of habitats to support special-status species and sensitive habitats are analyzed and recommendations for any regulatory permitting or further analysis that may be required prior to development activities occurring on the site are provided.

3.0 REGULATORY FRAMEWORK

The following describes federal, state, and local environmental laws and policies that are relevant to the California Environmental Quality Act (CEQA) review process. The CEQA significance criteria are also included in this section.

3.1 Federal Endangered Species Act

The United States Congress passed the Federal Endangered Species Act (FESA) in 1973 to protect those species that are endangered or threatened with extinction. FESA is intended to operate in conjunction with the National Environmental Policy Act (NEPA) to help protect the ecosystems upon which endangered and threatened species depend.

FESA prohibits the "take" of endangered or threatened wildlife species. "Take" is defined to include harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species or any attempt to engage in such conduct (FESA Section 3 [(3)(19)]). Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns (50 CFR §17.3). Harassment is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns (50 CFR §17.3). Actions that result in take can result in civil or criminal penalties.

FESA and Clean Water Act (CWA) Section 404 guidelines prohibit the issuance of wetland permits for projects that jeopardize the continued existence of any endangered or threatened species or results in the destruction or adverse modification of habitat of such species. The U.S. Army Corps of Engineers (Corps) must consult with the U.S. Fish and Wildlife Service (USFWS) and/or the National Marine Fisheries Service (NMFS) when threatened or endangered species under their jurisdiction may be affected by a proposed project. In the context of the proposed project, FESA would be initiated if development resulted in take of a threatened or endangered species or if issuance of a Section 404 permit or other federal agency action could result in take of an endangered species or adversely modify critical habitat of such a species.

3.2 Migratory Bird Treaty Act

Raptors (birds of prey), migratory birds, and other avian species are protected by a number of state and federal laws. The federal Migratory Bird Treaty Act (MBTA) prohibits the killing, possessing, or trading of migratory birds except in accordance with regulations prescribed by the Secretary of Interior. Section 3503.5 of the California Fish and Game Code states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto."

3.3 California Endangered Species Act

The State of California enacted the California Endangered Species Act (CESA) in 1984. CESA is similar to FESA but pertains to state-listed endangered and threatened species. CESA requires state agencies to consult with the California Department of Fish and Wildlife (CDFW), formerly the California Department of Fish and Game (CDFG), when preparing CEQA documents. The purpose is to ensure that the lead agency's actions do not jeopardize the continued existence of a listed species or result in the destruction, or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available (Fish and Game Code §2080). CESA directs agencies to consult with CDFW on projects or actions that could affect listed species, directs CDFW to determine whether jeopardy would occur and allows CDFW to identify "reasonable and prudent alternatives" to the project consistent with conserving the species. CESA allows CDFW to authorize exceptions to the state's prohibition against take of a listed species if the "take" of a listed species is incidental to carrying out an otherwise lawful project that has been approved under CEQA (Fish & Game Code § 2081).

3.4 CDFW Species of Concern

In addition to formal listing under FESA and CESA, species receive additional consideration by CDFW and lead agencies during the CEQA process. Species that may be considered for review are included on a list of "Species of Special Concern," developed by CDFW. It tracks species in California whose numbers, reproductive success, or habitat may be threatened.

3.5 California Native Plant Society

The California Native Plant Society (CNPS) maintains a list of plant species native to California that have low population numbers, limited distribution, or are otherwise threatened with extinction. This information is published in the *Inventory of Rare and Endangered Plants of California* (CNPS 2001). Potential impacts to populations of CNPS-listed plants receive consideration under CEQA review. The following identifies the definitions of the CNPS listings:

- Rank 1A: Plants presumed Extinct in California
- Rank 1B: Plants Rare, Threatened, or Endangered in California and elsewhere
- Rank 2: Plants Rare, Threatened, or Endangered in California, but more numerous elsewhere
- Rank 3: Plants about which we need more information – A Review List
- Rank 4: Plants of limited distribution – A Watch List

3.6 Jurisdictional Waters of the United States

3.6.1 Federal Jurisdiction

The Corps regulates discharge of dredged or fill material into waters of the United States under Section 404 of the CWA. "Discharges of fill material" are defined as the addition of fill material into waters of the U.S., including, but not limited to the following: placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes and sub-aqueous utility lines [33 C.F.R. §328.2(f)]. In addition, Section 401 of the CWA (33 U.S.C. 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards.

Waters of the U.S. include a range of wet environments such as lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, and wet meadows. Boundaries between jurisdictional waters and uplands are determined in a variety of ways depending on which type of waters is present. Methods for delineating wetlands and non-tidal waters are described below.

- Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" [33 C.F.R. §328.3(b)]. Presently, to be a wetland, a site must exhibit three wetland criteria: hydrophytic vegetation, hydric soils, and wetland hydrology existing under the "normal circumstances" for the site.
- The lateral extent of non-tidal waters is determined by delineating the ordinary high water mark (OHWM) [33 C.F.R. §328.4(c)(1)]. The OHWM is defined by the Corps as "that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" [33 C.F.R. §328.3(e)].

3.6.2 State Jurisdiction

CDFW is a trustee agency that has jurisdiction under Section 1600 *et seq.* of the California Fish and Game Code. Under Section 1602, a private party must notify CDFW if a proposed project will "substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by the department, or use any material from the streambeds...except when the department has been notified pursuant to Section 1601." If an existing fish or wildlife resource may be substantially adversely affected by the activity, CDFW may propose reasonable measures that will allow protection of those resources. If these measures are agreeable to the parties involved, they may enter into an agreement with CDFW identifying the approved activities and associated mitigation measures.

3.7 Wildlife Migration Corridors

Wildlife migration corridors are important for the movement of migratory wildlife populations. Corridors provide foraging opportunities and shelter during migration. Generally, wildlife migration corridors are established migration routes for many species of wildlife. In wooded areas, these corridors often occur in open meadow or riverine habitats and provide a clear route for migration in addition to supporting ample food and water sources during movement.

3.8 CEQA Significance Criteria

Section 15064.7 of the CEQA Guidelines encourages local agencies to develop and publish the thresholds that the agency uses in determining the significance of environmental effects caused by projects under its review. However, agencies may also rely upon the guidance provided by the expanded Initial Study checklist contained in Appendix G of the CEQA Guidelines. Appendix G provides examples of impacts that would normally be considered significant. Based on these examples, impacts to biological resources would normally be considered significant if the project would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW or USFWS;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and
- Conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional or state habitat conservation plan.

An evaluation of whether or not an impact on biological resources would be substantial must consider both the resource itself and how that resource fits into a regional or local context. Substantial impacts would be those that would diminish, or result in the loss of, an important biological resource, or those that would obviously conflict with local, state, or federal resource conservation plans, goals, or regulations. Impacts are sometimes locally important but not significant according to CEQA. The reason for this is that although the impacts would result in an adverse alteration of existing conditions, the impacts would not substantially diminish, or result in the permanent loss of, an important resource on a population-wide or region-wide basis.

3.9 El Dorado County General Plan

<u>CONSERVATION AND PROTECTION OF WATER RESOURCES</u>

GOAL 7.3: WATER QUALITY AND QUANTITY
Conserve, enhance, and manage water resources and protect their quality from degradation.

OBJECTIVE 7.3.1: WATER RESOURCE PROTECTION
Preserve and protect the supply and quality of the County's water resources including the protection of critical watersheds, riparian zones, and aquifers.

***Policy** 7.3.1.1* *Encourage the use of Best Management Practices, as identified by the Soil Conservation Service, in watershed lands as a means to prevent erosion, siltation, and flooding.*

***Policy** 7.3.1.2* *Establish water conservation programs that include both drought tolerant landscaping and efficient building design requirements as well as incentives for the conservation and wise use of water.*

***Policy** 7.3.1.3* *The County shall develop the criteria and draft an ordinance to allow and encourage the use of domestic gray water for landscape irrigation purposes. (See Title 22 of the State Water Code and the Graywater Regulations of the Uniform Plumbing Code).*

OBJECTIVE 7.3.2: WATER QUALITY
Maintenance of, and where possible, improvement of the quality of underground and surface water.

***Policy** 7.3.2.1* *Stream and lake embankments shall be protected from erosion, and streams and lakes shall be protected from excessive turbidity.*

***Policy** 7.3.2.2* *Projects requiring a grading permit shall have an erosion control program approved, where necessary.*

***Policy** 7.3.2.3* *Where practical and when warranted by the size of the project, parking lot storm drainage shall include facilities to separate oils and salts from storm water in accordance with the recommendations of the Storm Water Quality Task Force's California Storm Water Best Management Practices Handbooks (1993).*

***Policy** 7.3.2.4* *The County should evaluate feasible alternatives to the use of salt for ice control on County roads.*

Policy 7.3.2.5 *As a means to improve the water quality affecting the County's recreational waters, enhanced and increased detailed analytical water quality studies and monitoring should be implemented to identify and reduce point and non-point pollutants and contaminants. Where such studies or monitoring reports have identified sources of pollution, the County shall propose means to prevent, control, or treat identified pollutants and contaminants.*

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

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

Policy 7.3.3.2 *intentionally blank*

Policy 7.3.3.3 *The County shall develop a database of important surface water features, including lake, river, stream, pond, and wetland resources.*

Policy 7.3.3.4 *The Zoning Ordinance shall be amended to provide buffers and special setbacks for the protection of riparian areas and wetlands. The County shall encourage the incorporation of protected areas into conservation easements or natural resource protection areas.*

Exceptions to riparian and wetland buffer and setback requirements shall be provided to permit necessary road and bridge repair and construction, trail construction, and other recreational access structures such as docks and piers, or where such buffers deny reasonable use of the property, but only when appropriate mitigation measures and Best Management Practices are incorporated into the project. Exceptions shall also be provided for horticultural and grazing activities on agriculturally zoned lands that utilize "best management practices (BMPs)" as recommended by the County Agricultural Commission and adopted by the Board of Supervisors.

Until standards for buffers and special setbacks are established in the Zoning Ordinance, the County shall apply a minimum setback of 100 feet from all perennial streams, rivers, lakes, and 50 feet from intermittent streams and wetlands. These interim standards may be modified in a particular instance if more detailed information relating to slope, soil stability, vegetation, habitat, or other site- or project-specific conditions supplied as part of the review for a specific project demonstrates that a *different setback is necessary or would be sufficient to protect the particular riparian area at issue.*

For projects where the County allows an exception to wetland and riparian buffers, development in or immediately adjacent to such features shall be planned so that impacts on the resources are minimized. If avoidance and minimization are not feasible, the County shall make findings, based on documentation provided by the project proponent, that avoidance and minimization are infeasible.

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

OBJECTIVE 7.3.4: DRAINAGE
Protection and utilization of natural drainage patterns.

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

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

OBJECTIVE 7.3.5: WATER CONSERVATION
Conservation of water resources, encouragement of water conservation, and construction of wastewater disposal systems designed to reclaim and re-use treated wastewater on agricultural crops and for other irrigation and wildlife enhancement projects.

Policy 7.3.5.1 *Drought-tolerant plant species, where feasible, shall be used for landscaping of commercial development. Where the use of drought-tolerant native plant species is feasible, they should be used instead of non-native plant species.*

Policy 7.3.5.2 *A list of appropriate local indigenous drought tolerant plant materials shall be maintained by the County Planning Department and made available to the public.*

Policy 7.3.5.3 *The County Parks and Recreation Division shall use drought tolerant landscaping for all new parks and park improvement projects.*

Policy 7.3.5.4 *Require efficient water conveyance systems in new construction. Establish a program of ongoing conversion of open ditch systems shall be considered for conversion to closed conduits, reclaimed water supplies, or both, as circumstances permit.*

Policy 7.3.5.5 *Encourage water reuse programs to conserve raw or potable water supplies consistent with State Law.*

CONSERVATION OF BIOLOGICAL RESOURCES

GOAL 7.4: WILDLIFE AND VEGETATION RESOURCES
Identify, conserve, and manage wildlife, wildlife habitat, fisheries, and vegetation resources of significant biological, ecological, and recreational value.

OBJECTIVE 7.4.1: RARE, THREATENED, AND ENDANGERED SPECIES
The County shall protect State and Federally recognized rare, threatened, or endangered species and their habitats consistent with Federal and State laws.

Policy 7.4.1.1 *The County shall continue to provide for the permanent protection of the eight sensitive plant species known as the Pine Hill endemics and their habitat through the establishment and management of ecological preserves consistent with County Code Chapter 17.71 and the USFWS's Gabbro Soil Plants for the Central Sierra Nevada Foothills Recovery Plan (USFWS 2002).*

Policy 7.4.1.2 *Private land for preserve sites will be purchased only from willing sellers.*

Policy 7.4.1.3 *Limit land uses within established preserve areas to activities deemed compatible. Such uses may include passive recreation, research and scientific study, and education. In conjunction with use as passive recreational areas, develop a rare plant educational and interpretive program.*

Policy 7.4.1.4 *Proposed rare, threatened, or endangered species preserves, as approved by the County Board of Supervisors, shall be designated Ecological Preserve (-EP) overlay on the General Plan land use map.*

Policy 7.4.1.5 *Species, habitat, and natural community preservation/conservation strategies shall be prepared to protect special status plant and animal species and natural communities and habitats when discretionary development is proposed on lands with such resources unless it is determined that those resources exist, and either are or can be protected, on public lands or private Natural Resource lands.*

Policy 7.4.1.6 *All development projects involving discretionary review shall be designed to avoid disturbance or fragmentation of important habitats to the extent reasonably feasible. Where avoidance is not possible, the development shall be required to fully mitigate the effects of important habitat loss and fragmentation. Mitigation shall be defined in the Integrated Natural Resources Management Plan (INRMP) (see Policy 7.4.2.8 and Implementation Measure CO-M).*

The County Agricultural Commission, Plant and Wildlife Technical Advisory Committee, representatives of the agricultural community, academia, and other stakeholders shall be involved and consulted in defining the important habitats of the County and in the creation and implementation of the INRMP.

Policy 7.4.1.7 *The County shall continue to support the Noxious Weed Management Group in its efforts to reduce and eliminate noxious weed infestations to protect native habitats and to reduce fire hazards.*

OBJECTIVE 7.4.2: IDENTIFY AND PROTECT RESOURCES
Identification and protection, where feasible, of critical fish and wildlife habitat including deer winter, summer, and fawning ranges; deer migration routes; stream and river riparian habitat; lake shore habitat; fish spawning areas; wetlands; wildlife corridors; and diverse wildlife habitat.

Policy 7.4.2.1 *To the extent feasible in light of other General Plan policies and to the extent permitted by State law, the County of El Dorado will protect identified critical fish and wildlife habitat, as identified on the Important Biological Resources Map maintained at the Planning Department, through any of the following techniques: utilization of open space, Natural Resource land use designation, clustering, large lot design, setbacks, etc.*

Policy 7.4.2.2 *Where critical wildlife areas and migration corridors are identified during review of projects, the County shall protect the resources from degradation by requiring all portions of the project site that contain or influence said areas to be retained as non-disturbed natural areas through mandatory clustered development on suitable portions of the project site or other means such as density transfers if clustering cannot be achieved. The setback distance for designated or protected migration corridors shall be determined as part of the project's environmental analysis. The intent and emphasis of the Open Space land use designation and of the non-disturbance policy is to ensure continued viability of contiguous or interdependent habitat areas and the preservation of all movement corridors between related habitats. The intent of mandatory clustering is to provide a mechanism for natural resource protection while allowing appropriate development of private property. Horticultural and grazing projects on agriculturally designated lands are exempt from the restrictions placed on disturbance of natural areas when utilizing "Best Management Practices" (BMPs) recommended by the County Agricultural Commission and adopted by the Board of Supervisors when not subject to Policy 7.1.2.7.*

Policy 7.4.2.3 *Consistent with Policy 9.1.3.1 of the Parks and Recreation Element, low impact uses such as trails and linear parks may be provided within river* *and stream buffers if all applicable mitigation measures are incorporated into the design.*

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

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

Policy 7.4.2.6 *El Dorado County Biological Community Conservation Plans shall be required to protect, to the extent feasible, rare, threatened, and endangered plant species only when existing federal or State plans for non-jurisdictional areas do not provide adequate protection.*

Policy 7.4.2.7 *The County shall form a Plant and Wildlife Technical Advisory Committee to advise the Planning Commission and Board of Supervisors on plant and wildlife issues, and the committee should be formed of local experts, including agricultural, fire protection, and forestry representatives, who will consult with other experts with special expertise on various plant and wildlife issues, including representatives of regulatory agencies. The Committee shall formulate objectives which will be reviewed by the Planning Commission and Board of Supervisors.*

Policy 7.4.2.8 *Develop within five years and implement an Integrated Natural Resources Management Plan (INRMP) that identifies important habitat in the County and establishes a program for effective habitat preservation and management. The INRMP shall include the following components:*

A. Habitat Inventory. This part of the INRMP shall inventory and map the following important habitats in El Dorado County:

1. *Habitats that support special status species;*
2. *Aquatic environments including streams, rivers, and lakes;*
3. *Wetland and riparian habitat;*
4. *Important habitat for migratory deer herds; and*
5. *Large expanses of native vegetation.*

The County should update the inventory every three years to identify the amount of important habitat protected, by habitat type, through County programs and the amount of important habitat removed because of new development during that period. The inventory and mapping effort shall be developed with the assistance of the Plant and Wildlife Technical Advisory

Committee, CDFW, and USFWS. The inventory shall be maintained and updated by the County Planning Department and shall be publicly accessible.

B. *Habitat Protection Strategy. This component shall describe a strategy for protecting important habitats based on coordinated land acquisitions (see item D below) and management of acquired land. The goal of the strategy shall be to conserve and restore contiguous blocks of important habitat to offset the effects of increased habitat loss and fragmentation elsewhere in the county. The Habitat Protection Strategy should be updated at least once every five years based on the results of the habitat monitoring program (item F below). Consideration of wildlife movement will be given by the County on all future 4- and 6-lane roadway construction projects. When feasible, natural undercrossings along proposed roadway alignments that could be utilized by terrestrial wildlife for movement will be preserved and enhanced.*

C. *Mitigation Assistance. This part of the INRMP shall establish a program to facilitate mitigation of impacts to biological resources resulting from projects approved by the County that are unable to avoid impacts on important habitats. The program may include development of mitigation banks, maintenance of lists of potential mitigation options, and incentives for developers and landowner participation in the habitat acquisition and management components of the INRMP.*

D. *Habitat Acquisition. Based on the Habitat Protection Strategy and in coordination with the Mitigation Assistance program, the INRMP shall include a program for identifying habitat acquisition opportunities involving willing sellers. Acquisition may be by state or federal land management agencies, private land trusts or mitigation banks, the County, or other public or private organizations. Lands may be acquired in fee or protected through acquisition of a conservation easement designed to protect the core habitat values of the land while allowing other uses by the fee owner. The program should identify opportunities for partnerships between the County and other organizations for habitat acquisition and management. In evaluating proposed acquisitions, consideration will be given to site specific features (e.g., condition and threats to habitat, presence of special status species), transaction related features (e.g., level of protection gained, time frame for purchase completion, relative costs), and regional considerations (e.g., connectivity with adjacent protected lands and important habitat, achieves multiple agency and community benefits). Parcels that include important habitat and are located generally to the west of the El Dorado National Forest should be given priority for acquisition. Priority will also be given to parcels that* *would preserve natural wildlife movement corridors such as crossing under major roadways (e.g., U.S. Highway 50 and across canyons). All land acquired shall be added to the Ecological Preserve overlay area.*

E. *Habitat Management. Each property or easement acquired through the INRMP should be evaluated to determine whether the biological resources would benefit from restoration or management actions. Examples of the many types of restoration or management actions that could be undertaken to improve current habitat conditions include: removal of non native plant species, planting native species, repair and rehabilitation of severely grazed riparian and upland habitats, removal of culverts and other structures that impede movement by native fishes, construction of roadway under and overcrossing that would facilitate movement by terrestrial wildlife, and installation of erosion control measures on land adjacent to sensitive wetland and riparian habitat.*

F. *Monitoring. The INRMP shall include a habitat monitoring program that covers all areas under the Ecological Preserve overlay together with all lands acquired as part of the INRMP. Monitoring results shall be incorporated into future County planning efforts so as to more effectively conserve and restore important habitats. The results of all special status species monitoring shall be reported to the CNDDB. Monitoring results shall be compiled into an annual report to be presented to the Board of Supervisors.*

G. *Public Participation. The INRMP shall be developed with and include provisions for public participation and informal consultation with local, state, and federal agencies having jurisdiction over natural resources within the County.*

H. *Funding. The County shall develop a conservation fund to ensure adequate funding of the INRMP, including habitat maintenance and restoration. Funding may be provided from grants, mitigation fees, and the County general fund. The INRMP annual report described under item F above shall include information on current funding levels and shall project anticipated funding needs and anticipated and potential funding sources for the following five years.*

Policy 7.4.2.9 *The Important Biological Corridor (-IBC) overlay shall apply to lands identified as having high wildlife habitat values because of extent, habitat function, connectivity, and other factors. Lands located within the overlay district shall be subject to the following provisions except that where the overlay is applied to lands that are also subject to the Agricultural District (-A) overlay or that are within the Agricultural Lands (AL) designation, the land use restrictions associated with the -IBC policies will not apply to* *the extent that the agricultural practices do not interfere with the purposes of the -IBC overlay.*

- *Increased minimum parcel size;*
- *Higher canopy-retention standards and/or different mitigation standards/thresholds for oak woodlands;*
- *Lower thresholds for grading permits;*
- *Higher wetlands/riparian retention standards and/or more stringent mitigation requirements for wetland/riparian habitat loss;*
- *Increased riparian corridor and wetland setbacks;*
- *Greater protection for rare plants (e.g., no disturbance at all or disturbance only as recommended by U.S. Fish and Wildlife Service/California Department of Fish and Wildlife);*
- *Standards for retention of contiguous areas/large expanses of other (non-oak or non-sensitive) plant communities;*
- *Building permits discretionary or some other type of "site review" to ensure that canopy is retained;*
- *More stringent standards for lot coverage, floor area ratio (FAR), and building height; and*
- *No hindrances to wildlife movement (e.g., no fences that would restrict wildlife movement).*

The standards listed above shall be included in the Zoning Ordinance.

Wildland Fire Safe measures are exempt from this policy, except that Fire Safe measures will be designed insofar as possible to be consistent with the objectives of the Important Biological Corridor.

OBJECTIVE 7.4.3: COORDINATION WITH APPROPRIATE AGENCIES
Coordination of wildlife and vegetation protection programs with appropriate Federal and State agencies.

OBJECTIVE 7.4.4: FOREST AND OAK WOODLAND RESOURCES
Protect and conserve forest and woodland resources for their wildlife habitat, recreation, water production, domestic livestock grazing, production of a sustainable flow of wood products, and aesthetic values.

Policy 7.4.4.1 *The Natural Resource land use designation shall be used to protect important forest resources from uses incompatible with timber harvesting.*

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

Policy 7.4.4.3 *Utilize the clustering of development to retain the largest contiguous areas possible in wildland (undeveloped) status.*

Policy 7.4.4.4 *For all new development projects (not including agricultural cultivation and actions pursuant to an approved Fire Safe Plan necessary to protect existing structures, both of which are exempt from this policy) that would result in soil disturbance on parcels that (1) are over an acre and have at least 1 percent total canopy cover or (2) are less than an acre and have at least 10 percent total canopy cover by woodlands habitats as defined in this General Plan and determined from base line aerial photography or by site survey performed by a qualified biologist or licensed arborist, the County shall require one of two mitigation options: (1) the project applicant shall adhere to the tree canopy retention and replacement standards described below; or (2) the project applicant shall contribute to the County's Integrated Natural Resources Management Plan (INRMP) conservation fund described in Policy 7.4.2.8.*

Option A

The County shall apply the following tree canopy retention standards:

Percent Existing Canopy Cover	Canopy Cover to be Retained
80–100	60% of existing canopy
60–79	70% of existing canopy
40–59	80% of existing canopy
20–39	85% of existing canopy
10-19	90% of existing canopy
1-9 for parcels > 1 acre	90% of existing canopy

Under Option A, the project applicant shall also replace woodland habitat removed at 1:1 ratio. Impacts on woodland habitat and mitigation requirements shall be addressed in a Biological Resources Study and Important Habitat Mitigation Plan as described in Policy 7.4.2.8. Woodland replacement shall be based on a formula, developed by the County, that accounts for the number of trees and acreage affected.

Option B

The project applicant shall provide sufficient funding to the County's INRMP conservation fund, described in Policy 7.4.2.8, to fully compensate for the impact to oak woodland habitat. To compensate for fragmentation as well as habitat loss, the preservation mitigation ratio shall be 2:1 and based on the total woodland acreage onsite directly impacted by habitat *loss and indirectly impacted by habitat fragmentation. The costs associated with acquisition, restoration, and management of the habitat protected shall be included in the mitigation fee. Impacts on woodland habitat and mitigation requirements shall be addressed in a Biological Resources Study and Important Habitat Mitigation Plan as described in Policy 7.4.2.8.*

Policy 7.4.4.5 *Where existing individual or a group of oak trees are lost within a stand, a corridor of oak trees shall be retained that maintains continuity between all portions of the stand. The retained corridor shall have a tree density that is equal to the density of the stand.*

OBJECTIVE 7.4.5: NATIVE VEGETATION AND LANDMARK TREES
Protect and maintain native trees including oaks and landmark and heritage trees.

Policy 7.4.5.1 *A tree survey, preservation, and replacement plan shall be required to be filed with the County prior to issuance of a grading permit for discretionary permits on all high-density residential, multifamily residential, commercial, and industrial projects. To ensure that proposed replacement trees survive, a mitigation monitoring plan should be incorporated into discretionary projects when applicable and shall include provisions for necessary replacement of trees.*

Policy 7.4.5.2 *It shall be the policy of the County to preserve native oaks wherever feasible, through the review of all proposed development activities where such trees are present on either public or private property, while at the same time recognizing individual rights to develop private property in a reasonable manner. To ensure that oak tree loss is reduced to reasonable acceptable levels, the County shall develop and implement an Oak Tree Preservation Ordinance that includes the following components:*

A. Oak Tree Removal Permit Process. Except under special exemptions, a tree removal permit shall be required by the County for removal of any native oak tree with a single main trunk of at least 6 inches diameter at breast height (dbh), or a multiple trunk with an aggregate of at least 10 inches dbh. Special exemptions when a tree removal permit is not needed shall include removal of trees less than 36 inches dbh on 1) lands in Williamson Act Contracts, Farmland Security Zone Programs, Timber Production Zones, Agricultural Districts, designated Agricultural Land (AL), and actions pursuant to a Fire Safe plan; 2) all single family residential lots of one acre or less that cannot be further subdivided; 3) when a native oak tree is cut down on the owner's property for the owner's personal use; and 4) when written approval has been received from the County Planning Department. In passing judgment upon tree removal permit applications, the County may impose such reasonable conditions of approval as are necessary to protect the health of existing oak trees, *the public and the surrounding property, or sensitive habitats. The County Planning Department may condition any removal of native oaks upon the replacement of trees in kind. The replacement requirement shall be calculated based upon an inch for inch replacement of removed oaks. The total of replacement trees shall have a combined diameter of the tree(s) removed. Replacement trees may be planted onsite or in other areas to the satisfaction of the County Planning Department. The County may also condition any tree removal permit that would affect sensitive habitat (e.g., valley oak woodland), on preparation of a Biological Resources Study and an Important Habitat Mitigation Program as described in Policy 7.4.1.6. If an application is denied, the County shall provide written notification, including the reasons for denial, to the applicant.*

B. Tree Removal Associated with Discretionary Project. Any person desiring to remove a native oak shall provide the County with the following as part of the project application:

- *A written statement by the applicant or an arborist stating the justification for the development activity, identifying how trees in the vicinity of the project or construction site will be protected and stating that all construction activity will follow approved preservation methods;*
- *A site map plan that identifies all native oaks on the project site; and*
- *A report by a certified arborist that provides specific information for all native oak trees on the project site.*

C. Commercial Firewood Cutting. Fuel wood production is considered commercial when a party cuts firewood for sale or profit. An oak tree removal permit shall be required for commercial firewood cutting of any native oak tree. In reviewing a permit application, the Planning Department shall consider the following:

- *Whether the trees to be removed would have a significant negative environmental impact;*
- *Whether the proposed removal would not result in clear-cutting, but will result in thinning or stand improvement;*
- *Whether replanting would be necessary to ensure adequate regeneration;*
- *Whether the removal would create the potential for soil erosion;*
- *Whether any other limitations or conditions should be imposed in accordance with sound tree management practices; and*

- *What the extent of the resulting canopy cover would be.*

D. Penalties. Fines will be issued to any person, firm, or corporation that is not exempt from the ordinance who damages or destroys an oak tree without first obtaining an oak tree removal permit. Fines may be as high as three times the current market value of replacement trees as well as the cost of replacement, and/or replacement of up to three times the number of trees required by the ordinance. If oak trees are removed without a tree removal permit, the County Planning Department may choose to deny or defer approval of any application for development of that property for a period of up to 5 years. All monies received for replacement of illegally removed or damaged trees shall be deposited in the County's Integrated Natural Resources Management Plan (INRMP) conservation fund.

PRESERVATION OF OPEN SPACE

GOAL 7.6: OPEN SPACE CONSERVATION
Conserve open space land for the continuation of the County's rural character, commercial agriculture, forestry and other productive uses, the enjoyment of scenic beauty and recreation, the protection of natural resources, for protection from natural hazards, and for wildlife habitat.

OBJECTIVE 7.6.1: IMPORTANCE OF OPEN SPACE
Consideration of open space as an important factor in the County's quality of life.

***Policy** 7.6.1.1* *The General Plan land use map shall include an Open Space land use designation. The purpose of this designation is to implement the goals and objectives of the Land Use and the Conservation and Open Space Elements by serving one or more of the purposes stated below. In addition, the designations on the land use map for Rural Residential and Natural Resource areas are also intended to implement said goals and objectives. Primary purposes of open space include:*

Conserving natural resource areas required for the conservation of plant and animal life including habitat for fish and wildlife species; areas required for ecologic and other scientific study purposes; rivers, streams, banks of rivers and streams and watershed lands;

Conserving natural resource lands for the managed production of resources including forest products, rangeland, agricultural lands important to the production of food and fiber; and areas containing important mineral deposits;

Maintaining areas of importance for outdoor recreation including areas of outstanding scenic, historic and cultural value; areas particularly *suited for park and recreation purposes including those providing access to lake shores, beaches and rivers and streams; and areas which serve as links between major recreation and open space reservations including utility easements, banks of rivers and streams, trails and scenic highway corridors;*

Delineating open space for public health and safety including, but not limited to, areas which require special management or regulation because of hazardous or special conditions such as earthquake fault zones, unstable soil areas, flood plains, watersheds, areas presenting high fire risks, areas required for the protection of water quality and water reservoirs, and areas required for the protection and enhancement of air quality; and

Providing for open spaces to create buffers which may be landscaped to minimize the adverse impact of one land use on another.

Policy 7.6.1.2 *The County will provide for Open Space lands through:*

A. *The designation of land as Open Space;*

B. *The designation of land for low-intensity land uses as provided in the Rural Residential and Natural Resource land use designations;*

C. *Local implementation of the Federal Emergency Management Agency's National Flood Insurance Program;*

D. *Local implementation of the State Land Conservation Act Program; and*

E. *Open space land set aside through Planned Developments (PDs).*

Policy 7.6.1.3 *The County shall implement Policy 7.6.1.1 through zoning regulations and the administration thereof. It is intended that certain districts and certain requirements in zoning regulations carry out the purposes set forth in Policy 7.6.1.1 as follows:*

A. *The Open Space (OS) Zoning District is consistent with and shall implement the Open Space designation of the General Plan land use map and all other land use designations.*

B. *The Agricultural (A), Exclusive Agricultural (AE), Planned Agricultural (PA), Select Agricultural (SA-10), and Timberland Production Zone (TPZ) zoning districts are consistent with Policy 7.6.1.1 and serve one or more of the purposes set forth therein.*

C. *Zoning regulations shall provide for setbacks from all flood plains, streams, lakes, rivers and canals to maintain Purposes A, B, C, and D set forth in Policy 7.6.1.1.*

D. *Zoning regulations shall provide for maintenance of permanent open space in residential, commercial, industrial, agricultural, and residential agricultural zone districts based on standards established in those provisions of the County Code. The regulations shall minimize impacts on wetlands, flood plains, streams, lakes, rivers, canals, and slopes in excess of 30 percent and shall maintain Purposes A, B, C, and D in Policy 7.6.1.1.*

E. *Landscaping requirements in zoning regulations shall provide for vegetative buffers between incompatible land uses in order to maintain Purpose E in Policy 7.6.1.1.*

F. *Zoning regulations shall provide for Mineral Resource Combining Zone Districts and/or other appropriate mineral zoning categories which shall be applied to lands found to contain important mineral deposits if development of the resource can occur in compliance with all other policies of the General Plan. Those regulations shall maintain Purposes A, B, C, D, and E of Policy 7.6.1.1.*

Policy 7.6.1.4 *The creation of new open space areas, including Ecological Preserves, common areas of new subdivisions, and recreational areas, shall include wildfire safety planning.*

4.0 METHODS

Available information pertaining to the natural resources of the region was reviewed. All references reviewed for this assessment are listed in **Section 7.0, References**. Site-specific information was reviewed including the following:

- California Department of Fish and Wildlife (CDFW). 2013. *California Natural Diversity Data Base.* (CNDDB: Clarksville topographic quadrangle) Sacramento, California;
- Natural Resource Conservation Service (NRCS). 1974. *Soil Survey of El Dorado Area, California.* U.S. Department of Agriculture;
- NRCS. April 2012. *National Hydric Soils List.* U.S. Department of Agriculture;
- U.S. Fish and Wildlife Service. 2013. *Federal Endangered and Threatened Species that may be affected by Projects in the Clarksville 7.5-minute Series Topographic Quadrangle and El Dorado County*; USFWS, Sacramento, California; and
- U.S. Geological Survey. 1953 (Photorevised 1980). *Clarksville, California.* 7.5-minute series topographic quadrangle. United States Department of Interior.

Foothill Associates biologists conducted field surveys on the site on June 30, July 5, and July 7, 2006, and November 8, 2013. The site was systematically surveyed on foot to ensure total search coverage, with special attention given to identifying those portions of the site with the potential for supporting special-status species and sensitive habitats. During the site survey, plant and wildlife species observed were recorded and biological communities on the site where classified.

As part of this assessment, Foothill Associates conducted a formal wetland delineation for all potentially jurisdictional wetland features or waters of the U.S. following the Corps' three-parameter methodology (Environmental Laboratories 1987). The boundaries of these features were recorded with a submeter GeoXT global positioning system (GPS). The detailed results of the wetland delineation are provided under separate cover. The estimated acreages and general descriptions of wetland features found on the site are summarized in this biological resources assessment.

5.0 RESULTS

5.1 Site Location and Description

The site is located within western El Dorado County, and consists primarily of annual grassland with various wetland communities. The site is located within Township 9 North, Range 8 East, Section 15 of the USGS 7.5-minute series *Clarksville, California* topographic quadrangle (**Figure 1**).

5.2 Physical Features

5.2.1 Topography and Drainage

The site ranges from relatively flat to moderately sloping hills with elevations ranging from 685 to 750 feet above mean sea level (MSL). The site is located just below the ridgeline and surface runoff primarily runs from north to south and west to east. A roadside swale along White Rock Road on the southern boundary of the site captures surface runoff and drains into a storm drain inlet, which empties into the Carson Creek culvert under White Rock Road. Runoff from the easternmost part of the site drains to a riverine seasonal wetland feature immediately to the east of the site, which drains to Carson Creek.

5.2.2 Soils

The Natural Resources Conservation Service (NRCS) has identified and mapped three soil types occurring within the site (**Figure 2**). The soils that occur on the site include the following: **Argonaut gravelly loam 2 to 15 percent slopes, Auburn silt loam, 2 to 50 percent slopes;** and **Auburn very rocky silt loam, 2 to 50 percent slopes.**

- **Argonaut gravelly loam, 2 to 15 percent slopes**: These soils occur on undulating to moderately steep broad ridges typically located between 500 to 1,600 feet above MSL. The Argonaut series consists of well-drained soils underlain by rock at a depth of 20 to 40 inches. Bedrock outcroppings occur on the surface of this soil type at a frequency of less than five percent. These soils developed in well-drained gravelly loams formed in material weathered from basic and metasedimentary rocks. Permeability is very slow and surface run-off is slow to medium. Argonaut soils are typically used for livestock range and irrigated pasture. Occasionally, crops such as hay or grain and irrigated pasture are grown. Vegetation typically consists of annual grasses and herbaceous species. Areas of oaks (*Quercus* spp.), grey pine (*Pinus sabiniana*) and shrub-dominated communities also occur. The hydric soils list for El Dorado County identifies one unnamed hydric inclusion occurring within topographic swales or folds within this soil type.
- **Auburn silt loam, 2 to 50 percent slopes**: These soils occur on undulating to very steep foothills, typically located between 500 to 1,800 feet above MSL. It formed in material weathered from metasedimentary rocks. Bedrock outcroppings occur on the

surface of this soil type at a frequency of less than five percent. The Auburn series consists of well-drained soils underlain by hard metamorphic rocks at a depth of approximately 10 to 26 inches. Permeability is moderate and available water capacity is very low. Auburn soils are primarily used for rangeland and irrigated pasture. Occasionally, crops such as hay or grain are grown. In uncultivated areas, vegetation typically consists of annual grasses and herbaceous species. Areas of oaks, grey pine, and shrub-dominated vegetation communities also occur. The El Dorado County hydric soils list does not identify any hydric soil inclusions or components occurring within this soil type.

- **Auburn very rocky silt loam, 2 to 50 percent slopes**: These soils occur on more prominent steep to very steep foothills and slopes descending into creek channels and drainage ways, typically located between 500 to 1,800 feet above MSL. Bedrock outcroppings occur on the surface of this soil type at a frequency of five to 25 percent. The Auburn series consists of well-drained soils underlain by hard metamorphic rocks at a depth of 10 to 26 inches. Permeability is moderate and available water capacity is very low. Auburn soils are primarily used for rangeland and irrigated pasture. Occasionally, crops such as hay or grain or irrigated pasture are grown. In uncultivated areas, vegetation typically consists of annual grasses and herbaceous species. Areas of oaks, grey pine, and shrub-dominated vegetation communities also occur. The El Dorado County hydric soils list does not identify any hydric soil inclusions or components occurring within this soil type.

5.3 Biological Communities

Where possible and unless otherwise noted, the vegetation classifications herein follow the *Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995) (MCV). One major biological community, annual grassland, occurs within the site. Within this community are various wetland types or waters of the U.S. These communities provide habitat to a number of common species of wildlife and may provide suitable habitat for special-status species. Each of the biological communities, including associated common plant and wildlife species observed in or that are expected to occur in these communities, are described below.

5.3.1 Annual Grassland

Annual grassland covers the majority of the site; this community is characterized primarily by an assemblage of non-native grasses and forbs. Much of the vegetation in this community is common to the Central Valley. Dominant grass species identified on the site include ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceous*), medusahead (*Elymus caput-medusae*), and wild oat (*Avena* sp.). Common dominant herbaceous species include narrow tarplant (*Centromadia fitchii*), yellow star-thistle (*Centaurea solstitialis*), and Italian thistle (*Carduus pycnocephalus*).

Annual grassland habitat supports breeding, foraging, and shelter habitat for several species of wildlife. Wildlife species observed in this habitat during field surveys include killdeer (*Charadrius vociferus*), northern mockingbird (*Mimus polyglottos*), mourning dove (*Zenaida macroura*), western meadowlark (*Sturnella neglecta*), and turkey vulture (*Cathartes aura*).

5.3.2 Wetlands and Waters of the U.S.

Seep

A total of **0.012** acre of seeps have been delineated within the site. Seeps are characterized as areas where groundwater intersects with the soil surface. Typically, flow from seeps continues for some period after the rainy season and may continue all year. Seeps can support isolated wetland vegetation (such as on a hillside), or seeps may form the headwaters of a riverine seasonal wetland or other jurisdictional drainage feature. Vegetation in seeps often consists of plant species associated with seasonal and perennial marsh habitats. When seeps flow for only short periods beyond the rainy season and into the warm season, herbaceous perennial wetland species typically dominate. Species observed in the seeps on site include iris leaved rush (*Juncus xiphiodes*), rabbitsfoot grass (*Polypogon monspieliensis*), perennial ryegrass (*Festuca perennis*), and little rattlesnake grass (*Briza minor*).

Depressional Seasonal Wetland

A total of **0.011** acre of depressional seasonal wetlands have been delineated within the site. Seasonal wetlands are those depressions or topographic folds within the topography that inundate or flow for short periods of time following intense rains, but do not maintain seasonal aquatic or saturated soils conditions for durations long enough for colonization by perennial, obligate plant species. As such, plant species in seasonal wetlands are generally of two types: species that can tolerate short periods of inundation but have not adapted to withstand sustained aquatic or saturated soils conditions, and short-lived (primarily annual) species that take advantage of ephemeral aquatic and/or saturated soils conditions. Species observed in the seasonal wetland include Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*) and perennial ryegrass.

Ephemeral Drainage

A total of **0.014** acre of ephemeral drainage has been delineated within the site. Ephemeral drainages are features that do not meet the three-parameter criteria for vegetation, hydrology, and soils but do convey water and exhibit an ordinary high water mark. Water flows within ephemeral drainages are fed primarily by precipitation and storm water run off. These features convey water during and immediately after storm events, but do not flow continuously throughout the winter and spring. Typically, these features exhibit a defined bed and bank and show signs of scouring as a result of rapid flow events. The bed of ephemeral drainages consists of cobble often interrupted with bedrock. Hydrophytic vegetation may occur in association with ephemeral drainages. The ephemeral drainages are located in the northern portion of the site and are generally associated with one of the seeps.

5.4 Special-Status Species

Special-status species are plant and wildlife species that have been afforded special recognition by federal, State, or local resource agencies or organizations. Special-status species are defined as:

- Listed or proposed for listing under CESA and/or FESA;
- Protected under other regulations (e.g. Migratory Bird Treaty Act);
- Listed by CDFW as a Species of Special Concern;
- Listed by CNPS; or
- Any other species that would receive consideration according to the CEQA Guidelines.

Special-status species considered for this analysis are based on queries of the CNDDB and the online versions of the USFWS and CNPS species occurrence lists for the 7.5-minute USGS *Clarksville* topographic quadrangle (**Table 1**). Table 1 includes the common name and scientific name for each species, regulatory status, habitat descriptions, and potential for occurrence on the site. **Figure 3** depicts the locations of special-status species recorded in the CNDDB within five miles of the site. The following set of criteria has been used to determine each species' potential for occurrence on the site:

- **Present**: Species known to occur on the site, based on CNDDB records, and/or was observed on the site during the field survey(s).
- **High**: Species known to occur on or near the site (based on CNDDB records within five miles, and/or based on professional expertise specific to the site or species) and there is suitable habitat on the site.
- **Low**: Species known to occur in the vicinity of the site, and there is marginal habitat on the site.-**OR**-Species is not known to occur in the vicinity of the site; however there is suitable habitat on the site.
- **No**: Species is not known to occur on or in the vicinity of the site and there is no suitable habitat for the species on the site.-**OR**-Species was surveyed for during the appropriate season with negative results.

Only those species that are known to be present or have a high or low potential for occurrence will be discussed in further detail following **Table 1**.

Table 1 — Listed and Special-Status Species Potentially Occurring on the Site or in the Vicinity

Special-Status Species	Regulatory Status (Federal; State; Local; CNPS)	Habitat Requirements	Potential for Occurrence
Plants			
Bisbee Peak rush-rose *Helianthemum suffrutescens*	--;--;--;3	Rocky hillsides in chaparral areas. Often associated with gabbro soil types.	**No**; appropriate gabbroic soils and chaparral habitat do not occur within the site.
Boggs Lake hedge-hyssop *Gratiola heterosepala*	--;CE;--;1B	Shallow ponds and margins of vernal pools.	**No**; wetland features on site do not provide suitable habitat for this species.
Brandegee's clarkia *Clarkia biloba* ssp. *brandegeeae*	--;--;--;4	Foothill woodlands, cismontane woodland, lower montane coniferous, forest openings and often road cuts. Usually in dry areas. Occurs from 900 to 2,600 feet elevation.	**No**; site is not located within elevation range of this species and there is no suitable habitat onsite.
El Dorado mule ears *Wyethia reticulata*	--;--;--;1B	Wooded slopes and chaparral between 1,000 to 1,500 feet elevation. Usually associated with gabbro soils.	**No**; appropriate gabbroic soils and chaparral habitat do not occur within the site. No CNDDB records occur within five miles of the site for this species. Site is not located within elevation range.
El Dorado bedstraw *Galium californicum* ssp. *sierrae*	FE;CR;SLC;1B	Open pine forests and oak woodlands between 300 and 2,000 feet elevation associated with gabbro soils.	**No**; appropriate soil conditions do not occur onsite for this species. There are no CNDDB records for this species within five miles of the site.
Layne's ragwort *Senecio layneae*	FT;CR;--;1B	Dry pine woodlands, oak woodlands, or chaparral areas associated with serpentine soils.	**No**; site does not contain appropriate serpentine soils or habitat conditions.
Pine Hill ceanothus *Ceanothus roderickii*	FE;CR;--;1B	Dry, stony soils in chaparral areas. Often associated with serpentine or gabbro soil types.	**No**; appropriate gabbroic soils and chaparral habitat do not occur within the site.
Pine Hill flannelbush *Fremontodendron decumbens*	FE;CR;--;1B	Chaparral and oak and pine woodlands often on rocky ridges with gabbro soils.	**No**; appropriate gabbroic soils and chaparral habitat do not occur within the site.

Special-Status Species	Regulatory Status (Federal; State; Local; CNPS)	Habitat Requirements	Potential for Occurrence
Red Hills soaproot *Chlorogalum grandiflorum*	--;--;--;1B	Open hillsides in chaparral communities. Usually associated with gabbro or serpentine soils.	**No**; appropriate gabbroic soils and chaparral habitat do not occur within the site.
Sanford's arrowhead *Sagittaria sanfordii*	--;--;--;1B	Freshwater wetlands, marsh between 15 and 3,600 feet.	**No**; wetland features on site do not provide suitable habitat for this species.
Wildlife			
Invertebrates			
California linderiella *Linderiella occidentalis*	--;CSC;--;--	Vernal pools, swales, and ephemeral freshwater habitat.	**No**; there is no suitable habitat on the site for this species.
Conservancy fairy shrimp *Branchinecta conservatio*	FE;--;--;--	Vernal pools, swales, and ephemeral freshwater habitat.	**No**; there is no suitable habitat on the site for this species.
Blennosperma vernal pool andrenid bee *Andrena blennospermatis*	--;CSC;--;--	Upland areas near vernal pools, swales, and ephemeral freshwater habitat.	**No**; there is no suitable habitat on the site for this species.
Conservancy fairy shrimp *Branchinecta conservation*	FE;--;--;--	Large, deep vernal pools and swales and other seasonally inundated aquatic habitats.	**No**; there is no suitable habitat on the site for this species.
Ricksecker's water scavenger beetle *Hydrochara rickseckeri*	--;CSC;--;--	Weedy, shallow, open water, farm ponds, vernal pools and slow moving stream habitats.	**No**; site does not support suitable aquatic habitat.
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT;--;--;--	Blue elderberry shrubs usually associated with riparian areas.	**No**; there are no elderberry shrubs on the site.
Vernal pool fairy shrimp *Branchinecta lynchi*	FT;--;--;--	Vernal pools, swales, and ephemeral freshwater habitat.	**No**; there is no suitable habitat on the site for this species.
Vernal pool tadpole shrimp *Lepidurus packardi*	FE;--;--;--	Vernal pools, swales, and ephemeral freshwater habitat.	**No**; there is no suitable habitat on the site for this species.
Fish			
Central Valley spring-run Chinook salmon *Oncorhynchus tshawytscha*	FT; CT; --; --	Spawn in Mill, Deer, and Butte Creeks and in Yuba River and Feather River watersheds. Juveniles may journey up to 5 miles upstream in Sacramento River tributaries.	**No**; there is no suitable habitat on the site for this species.

Special-Status Species	Regulatory Status (Federal; State; Local; CNPS)	Habitat Requirements	Potential for Occurrence
Central Valley winter-run Chinook salmon *Oncorhynchus tshawytscha*	FE;CE;--;--	Spawn in northern Sacramento River (Redding to Red Bluff) and its tributaries. Juveniles may journey up to 5 miles upstream in other tributaries.	**No**; there is no suitable habitat on the site for this species.
Central Valley steelhead *Oncorhynchus mykiss*	FT;--;--;--	Rivers and streams tributary to the Sacramento-San Joaquin Rivers and Delta ecosystems.	**No**; there is no suitable habitat on the site for this species.
Delta smelt *Hypomesus transpacificus*	FT;CE;--;--	Shallow fresh or brackish water tributary to the Delta ecosystem; spawns in freshwater sloughs and channel edgewaters.	**No**; there is no suitable habitat on the site for this species.
Green sturgeon *Pogonichthys macrolepidotus*	FT;CSC;--;--	Coastal bays and estuaries and marine waters. Spawns in Sacramento River; prefers fast, deep water with cobble bottom.	**No**; there is no suitable habitat on the site for this species.
Amphibians/Reptiles			
California red-legged frog *Rana draytonii*	FT;CSC;--;--	Requires a permanent water source and is typically found along quiet, slow-moving streams, ponds, or marsh communities with emergent vegetation.	**No**; site does not support suitable aquatic, upland, or dispersal habitat for this species. No known populations occur within project vicinity.
California tiger salamander *Ambystoma californiense*	FT;CT;--;--	Breeds in vernal pools and seasonal ponds in grasslands and oak savannas. Adults spend summer in small mammal burrows.	**No**; there is marginal upland habitat on the site for this species but no known occurrences within 5 miles of the site.
Giant garter snake *Thamnophis gigas*	FT; CT; --; --	Agricultural wetlands and other wetlands such as irrigation and drainage canals, low gradient streams, marshes, ponds, sloughs, small lakes, and their associated uplands.	**No**; there is no suitable habitat on the site for this species.
Western pond turtle *Actinemys marmorata*	--;CSC;--;--	Agricultural wetlands and other wetlands such as irrigation and drainage canals, low-gradient streams, marshes, ponds, sloughs, small lakes, and associated uplands.	**No**; site does not support suitable aquatic or upland habitat for this species.

Special-Status Species	Regulatory Status (Federal; State; Local; CNPS)	Habitat Requirements	Potential for Occurrence
Birds			
Bald eagle *Haliaeetus leucocephalus*	--;CE;--;--	Nesting restricted to the mountainous habitats near permanent water sources in the northernmost counties of California, the Central Coast Region, and on Santa Catalina Island. Winters throughout most of California at lakes, reservoirs, river systems, and coastal wetlands.	**No**; there is no suitable habitat for this species on the site.
Burrowing owl *Athene cunicularia*	--;CSC;--;-- (burrow sites and some wintering sites)	Nests in burrows in the ground, often in old ground squirrel burrows or badger, within open dry grassland and desert habitat.	**Low**; the site supports marginal habitat, and three sightings have occurred within 5 miles.
Great blue heron *Ardea herodiasi*	--;CSC;--;-- (nesting colony)	Brackish marsh, estuary, freshwater marsh. Nests near marshes, tideflats, irrigated pastures and margins of rivers and lakes.	**No**; there is no suitable habitat for this species on the site.
Great egret *Ardea alba*	--;CSC;--;-- (nesting colony)	Habitat includes brackish marshes, estuaries, and freshwater marsh. Nests near marshes, tideflats, irrigated pastures and margins of rivers and lakes.	**No**; there is no suitable habitat for this species on the site.
Swainson's hawk *Buteo swainsoni*	--; CT; --;--	Nests in isolated trees or riparian woodlands adjacent to suitable foraging habitat such as agricultural fields and open grasslands.	**Low**; there is no suitable nesting habitat onsite but the site may be used for foraging habitat.
Tricolored blackbird *Agelaius tricolor*	--;CSC;--;-- (nesting colony)	Nests in dense blackberry, cattail, tules, willow, or wild rose within emergent wetlands throughout the Central Valley and foothills surrounding the valley.	**No**; there is no suitable habitat for this species on the site.
White-tailed kite *Elanus leucurus*	--;CFP;--;--	Nests in isolated trees or woodland areas with suitable open foraging habitat.	**High**; site provides suitable foraging habitat, but no nesting habitat.
Other Raptors (Hawks, Owls and Vultures)	MBTA and §3503.5 Department of Fish and Game Code	Nests in a variety of communities including cismontane woodland, mixed coniferous forest, chaparral, montane meadow, riparian, and urban communities.	**High**; site provides suitable foraging habitat, but no nesting habitat.

Special-Status Species	Regulatory Status (Federal; State; Local; CNPS)	Habitat Requirements	Potential for Occurrence
Federally Listed Species:		**California State Listed Species:**	**CNPS* Rank Categories:**
FE = federal endangered	FC = candidate	CE = California state endangered	1A = plants presumed extinct in California
FT = federal threatened	PT = proposed threatened	CT = California state threatened	1B = plants rare, threatened, or endangered in California and elsewhere
	FPD = proposed for delisting	CR = California state rare	2 = plants rare, threatened, or endangered in California, but common elsewhere
	FD = delisted	CFP = California Fully Protected	3 = plants about which we need more information
		CSC = California Species of Special Concern	4 = plants of limited distribution
			Other Special-status Listing:
Source: Foothill Associates			SLC = species of local or regional concern or conservation significance

5.4.1 Listed and Special-Status Plants

Based on a records search of the CNDDB and the USFWS list, special-status plant species have the potential to occur on the site or in the vicinity. Based on field observations and literature review specific to the special-status plants listed in **Table 1**, is was determined that no special-status plant species are expected to occur on the site due to a lack of suitable habitats for those plants known to occur in the vicinity.

5.4.2 Listed and Special-Status Wildlife Species

Based on a records search of the CNDDB and the USFWS list, special-status wildlife species have the potential to occur on the site or in the vicinity. Based on field observations and literature review specific to the special-status wildlife listed in **Table 1**, the potential for occurrence has been determined for each species. The species that are considered to have a high potential to occur on the site include white-tailed kite (*Elanus leucurus*), as well as other raptor and migratory bird species. Burrowing owl (*Athene cunicularia*) and Swainson's hawk (*Buteo swainsoni*) have a low potential to occur on the site.

Wildlife Species with a High Potential to Occur

<u>White-tailed Kite</u>

The white-tailed kite is a medium-sized raptor and a year-long resident in coastal and valley lowlands in California. White-tailed kites are monogamous and breed from February to October, peaking from May to August (Zeiner *et al.* 1990). This species nests near the top of dense oaks, willows (*Salix* spp.), or other large trees. There are three CNDDB records for white-tailed kite within five miles of the site (CDFW 2013). This species was not observed during field surveys, but the grassland habitat within the site provides suitable foraging habitat for this species. There are no suitable nest trees on the site. Therefore, this species has a *high* potential to forage on the site but does not nest on the site.

Other Raptor and Migratory Bird Species

Other raptor species forage and nest in a variety of habitats throughout El Dorado County. The nests of raptors and most other birds are protected under the MBTA. Raptors are also protected by Section 3503.5 of the California Fish and Game Code, which makes it illegal to destroy any active raptor nest. The grassland habitat within the site is suitable foraging habitat for various raptor species and potential nesting habitat for other migratory bird species. However, there are no trees on the site to provide nesting habitat for raptor species. Consequently, raptor species, with the exception of burrowing owls, which are further discussed below, would not be expected to nest on the site due to a lack of suitable nesting habitat. Raptors and other protected migratory birds have a *high* potential to occur on the site.

Wildlife Species with a Low Potential to Occur

Burrowing Owl

Burrowing owl is a small ground-dwelling owl that occurs in western North America from Canada to Mexico, and east to Texas, and Louisiana. Although in certain areas of its range burrowing owls are migratory, these owls are predominantly non-migratory in California (Zeiner *et al.* 1990). The breeding season for burrowing owls occurs from February to August, peaking in April and May (Zeiner *et al.* 1990). Burrowing owls nest in burrows in the ground, often in old ground squirrel burrows. This owl is also known to use artificial burrows including pipes, culverts, and nest boxes. There are three CNDDB records for this species within five miles of the site (CDFW 2013), and the annual grassland community within the site is suitable nesting and foraging habitat for this species. However, the current density of the grassland vegetation on the site and the general lack of suitable burrows lowers the potential for this species to occur on the site. Therefore, the potential for this species to occur on the site is *low*.

Swainson's hawk

Swainson's hawk is a long-distance migrant with nesting grounds in western North America. The Swainson's hawk population that nests in the Central Valley winters primarily in Mexico, while the population that nests in the interior portions of North America winters in South America (Bradbury *et. al.* in prep.). Swainson's hawks arrive in the Central Valley between March and early April to establish breeding territories. Breeding occurs from late March to late August, peaking in late May through July (Zeiner *et al.* 1990). In the Central Valley, Swainson's hawks nest in isolated trees, small groves, or large woodlands next to open grasslands or agricultural fields. This species typically nests near riparian areas; however, it has been known to nest in urban areas as well. Nest locations are usually in close proximity to suitable foraging habitats, which include fallow fields, annual grasslands, irrigated pastures, alfalfa and other hay crops, and low-growing row crops. Swainson's hawks leave their breeding grounds to return to their wintering grounds in late August or early September (Bloom and De Water, 1994). There are two records in the CNDDB of this species within five miles of the site (CDFW 2013), and although the grasslands provide potential foraging habitat, there are no suitable nest trees on site. The species was not observed on the site during the biological assessment. For these reasons, Swainson's hawk has a *low* potential to occur on the site.

5.5 Sensitive Habitats

Sensitive habitats include those that are of special concern to resource agencies or those that are protected under CEQA, Section 1600 of the California Fish and Game Code, or Section 404 of the Clean Water Act. Additionally, sensitive habitats are protected under the specific policies outlined in the El Dorado County General Plan. Sensitive habitats identified within the site include potential waters of the U.S. including seeps and ephemeral drainages (**Figure 4**). There are no wildlife migration corridors on the project site. There are no protected trees on the project site.

5.5.1 Potential Jurisdictional Waters of the U.S.

Potential jurisdictional waters of the U.S. within the project area total approximately 0.037 acre including 0.012 acre of seeps, and 0.014 acre of ephemeral drainages, and 0.011 acres of depressional seasonal wetlands (**Figure 4**). Potential jurisdictional areas in the project area have been formally delineated; however, the Corps has not verified these acreages as of the date of preparation of this biological resource assessment. As discussed in the **Regulatory Framework** section of this document, jurisdictional waters of the U.S. are subject to Section 404 of CWA and are regulated by the Corps.

6.0 DISCUSSION AND RECOMMENDATIONS

As discussed previously, the ±23-acre site consists primarily of annual grassland habitat used for grazing. Known or potential biological constraints on the site include the following:

- Potential foraging habitat for Swainson's hawk;
- Potential habitat for ground-nesting raptors and other migratory birds; and
- Sensitive habitats (potential waters of the U.S. subject to Section 404 of CWA).

6.1 Swainson's Hawk

Although no Swainson's hawks were observed on the property during field surveys, the site may be considered potential foraging habitat for this species since they are known to nest within five miles of the site (**Figure 3**). Determination of foraging habitat and any required mitigation strategies will be made in coordination with CDFW.

6.2 Ground-Nesting Birds

As stated previously, annual grassland on the site provides suitable nesting and foraging habitat for burrowing owl and other migratory birds. For this reason, it is recommended that a pre-construction survey be conducted no more than 30 days prior to the onset of construction activities to determine if burrowing owls or other migratory birds occupy the site. Burrowing owls can be present during all times of the year in California, so this survey is recommended regardless of the time construction activities occur.

If active owl burrows are located during the pre-construction survey, it is recommended that a 250-foot buffer zone be established around each burrow with an active nest until the young have fledged and are able to exit the burrow. If occupied burrows are found with no nesting occurring, or if active burrows are found after the young have fledged, or if development commences after the breeding season (typically February-August), passive relocation of the birds should be performed. Passive relocation involves installing a one-way door at the burrow entrance, which encourages the owls to move from the occupied burrow. CDFW should be consulted for current guidelines and methods for passive relocation of any owls found on the site. Mitigation for project impacts that result in relocation of burrowing owls and loss of burrows and/or foraging habitat may be required for CEQA projects (CDFW recommends 6.5 acres of foraging habitat be preserved for each active burrow that would be impacted by project activities). These mitigation measures would only apply in the event that burrowing owls were encountered during the pre-construction survey.

If active nests of other migratory birds are identified during the survey, a buffer zone should be established as recommended by the project biologist. The nest should be monitored until the young have fledged and the nest is no longer in active use.

6.3 Sensitive Habitats

The site contains approximately 0.037 acre of potentially jurisdictional waters of the U.S. features (**Figure 4**). These areas are potentially regulated by the Corps and are protected under the El Dorado County General Plan. Consequently, it is recommended that prior to the issuance of a grading permit, the wetland delineation performed on the site should be submitted to the Corps for verification and the appropriate Section 404 permit should be acquired for any project-related impacts to jurisdictional features. Any waters of the U.S. that would be lost or disturbed should be replaced or rehabilitated on a "no-net-loss" basis in accordance with the Corps' mitigation guidelines. Habitat restoration, rehabilitation, and/or replacement should be at a location and by methods agreeable to the Corps.

If a 404 permit is required for the proposed project, water quality concerns during construction would be addressed in a Section 401 water quality certification from the Regional Water Quality Control Board. A Storm Water Pollution Prevention Plan (SWPPP) would also be required during construction activities. SWPPPs are required in issuance of a National Pollutant Discharge Elimination System (NPDES) construction discharge permit by the U.S. Environmental Protection Agency. Implementation of Best Management Practices (BMPs) during construction is standard in most SWPPPs and water quality certifications. Examples of BMPs include stockpiling of debris away from regulated wetlands and waterways; immediate removal of debris piles from the site during the rainy season; use of silt fencing and construction fencing around regulated waterways; and use of drip pans under work vehicles and containment of fuel waste throughout the site during construction.

6.4 Summary of Recommendations

- Request verification of wetland delineation and apply for applicable 404 permit if any jurisdictional features will be impacted by site development.
- Coordinate with CDFW regarding mitigation for impacts to potential Swainson's hawk foraging habitat.
- Conduct pre-construction survey for burrowing owls and other ground-nesting birds.

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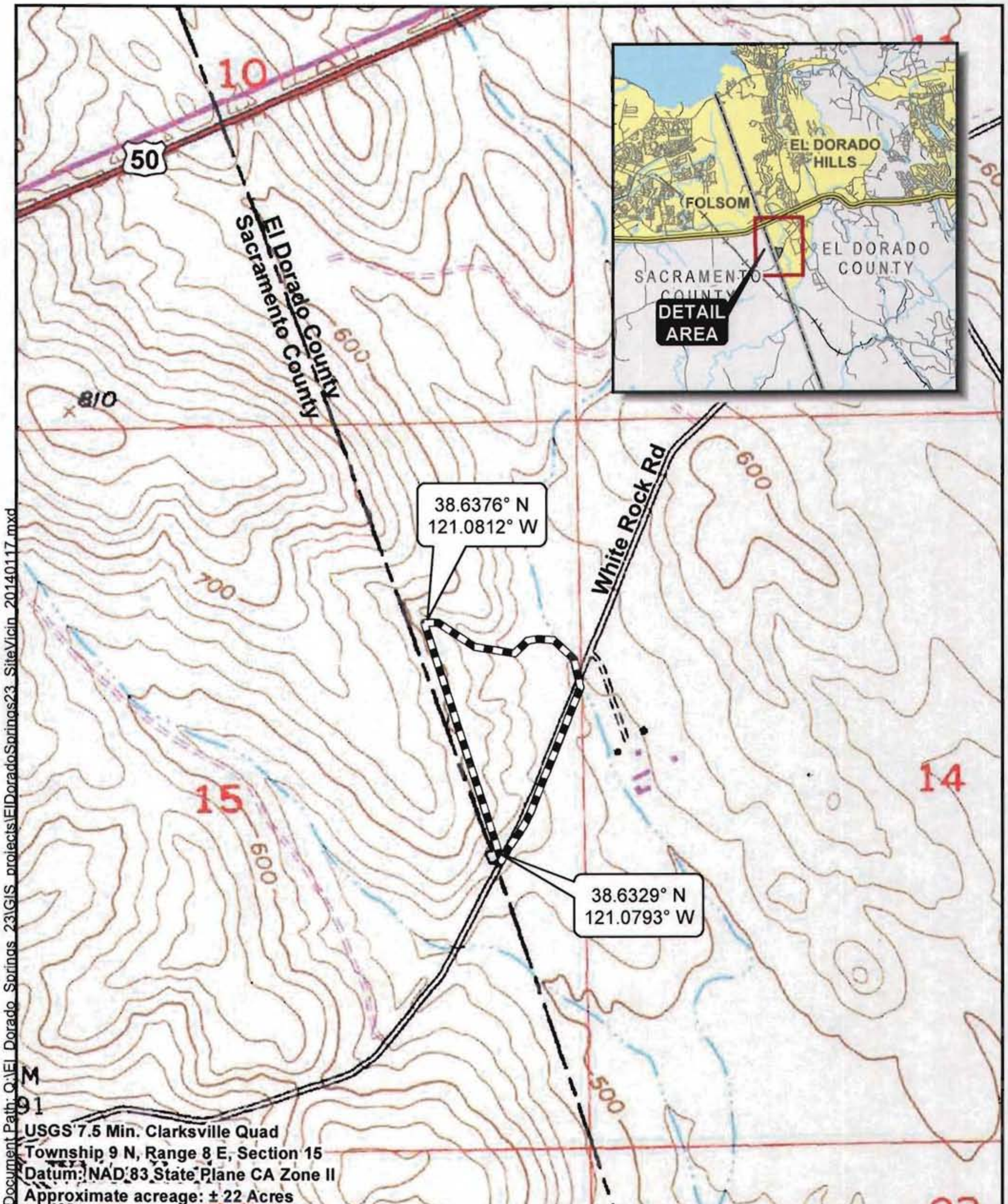

SITE AND VICINITY

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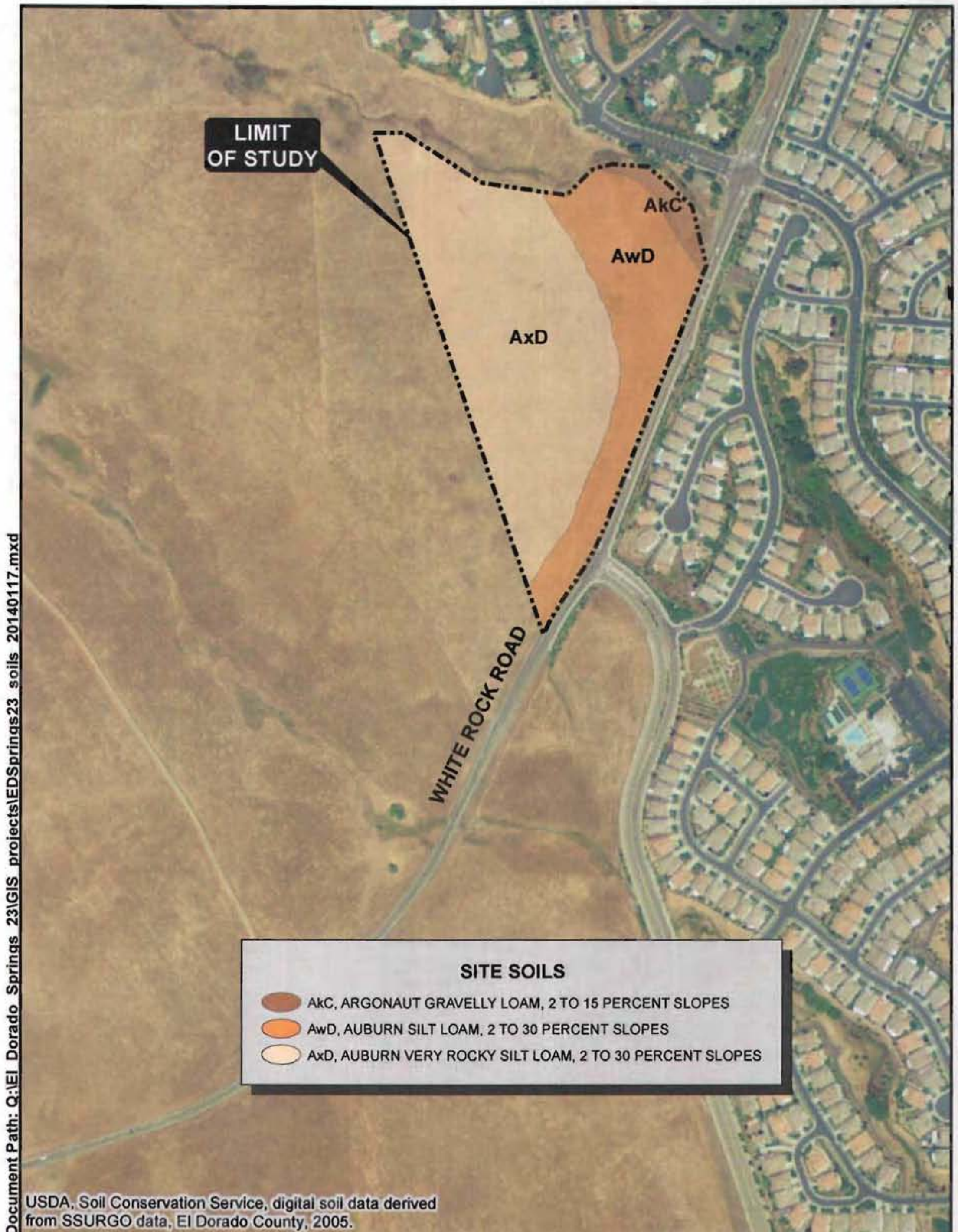

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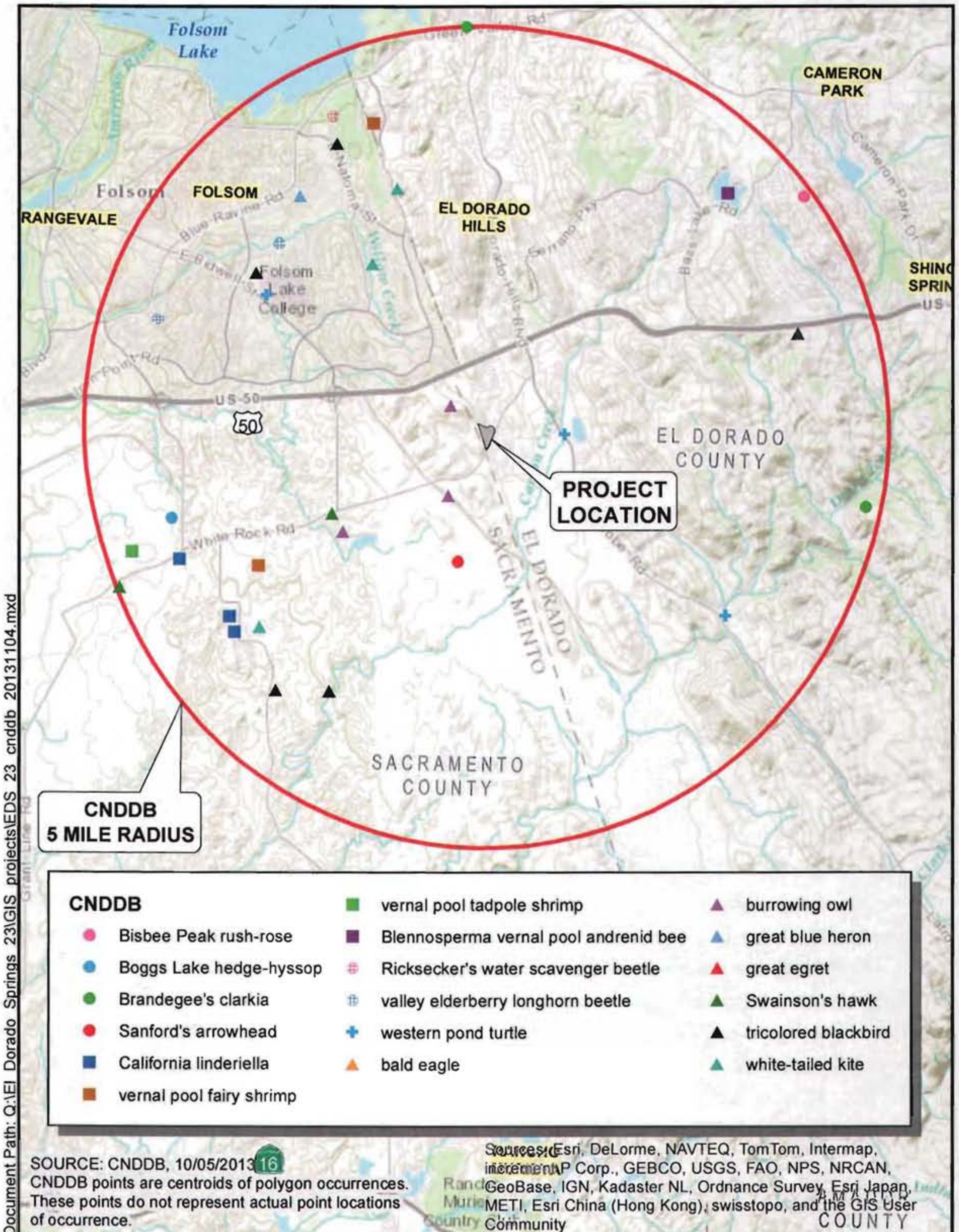

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FIGURE 3

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BIOLOGICAL CONSTRAINTS

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Rev: 02/10/2014

FIGURE 4

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Delineation of Waters of the United States

El Dorado Springs ±23-Acre Site
El Dorado County, California

Prepared for:

U.S. Army Corps of Engineers

Contracted By:

Standard Pacific Homes

March 7, 2014

Submitted by:

FOOTHILL ASSOCIATES

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1.0 INTRODUCTION

The purpose of this document is to present the results of a delineation of jurisdictional waters of the United States, including wetlands, on the ±23-acre El Dorado Springs site located in western El Dorado County, California (**Figure 1**).

This report presents the results of Foothill Associates' review of available literature, aerial photographs, soil surveys (**Figure 2**), and fieldwork on the site. These results are summarized to depict jurisdictional waters of the United States following the technical guidelines provided in the *Corps Wetlands Delineation Manual* (Environmental Laboratory, 1987) and the *Arid West Regional Supplement* (Corps, 2008) for identifying wetlands and distinguishing them from aquatic habitats and other non-wetlands. The jurisdictional boundaries for other waters of the United States were identified based on the presence of an ordinary high-water mark (OHWM) as defined in 33 CFR 328.3(e).

The delineation methodology is described in this report, followed by the results of the delineation. Details regarding soils, topography, hydrology, and vegetation are summarized and routine wetland determination data forms are provided in **Appendix B**. A detailed delineation map illustrates potential waters of the U.S. on the site (**Figure 3**).

2.0 REGULATORY BACKGROUND

The U.S. Army Corps of Engineers (Corps) regulates discharge of dredged or fill material into waters of the United States under Section 404 of the Clean Water Act (CWA). "Discharges of fill material" is defined as the addition of fill material into waters of the U.S., including, but not limited to the following: placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; fill for intake and outfall pipes; and subaqueous utility lines [33 C.F.R. §328.2(f)].

Section 401 of the CWA (33 U.S.C. 1341) requires any applicant for a Federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards.

Section 404 of the Clean Water Act requires approval prior to discharging dredged or fill material into the waters of the United States. Typical activities requiring Section 404 permits are:

- Depositing of fill or dredged material in waters of the U.S. or adjacent wetlands;
- Site development fill for residential, commercial, or recreational developments;
- Construction of revetments, groins, breakwaters, levees, dams, dikes, and weirs; and
- Placement of riprap and road fills.

Section 10 of the Rivers and Harbors Act of 1899 requires approval prior to the accomplishment of any work in or over navigable waters of the United States, or which affects the course, location, condition or capacity of such waters. Typical activities requiring Section 10 permits are:

- Construction of piers, wharves, bulkheads, dolphins, marinas, ramps, floats intake structures, and cable or pipeline crossings; and
- Dredging and excavation.

Any person, firm, or agency (including Federal, State, and local government agencies) planning to work in navigable waters of the United States, or dump or place dredged or fill material in waters of the United States, must first obtain a permit from the Corps. Permits, licenses, variances, or similar authorization may also be required by other Federal, State, and local statutes.

2.1 Waters of the United States

Waters of the United States include essentially all surface waters such as all navigable waters and their tributaries, all interstate waters and their tributaries, all wetlands adjacent to these waters, and all impoundments of these waters. Navigable waters of the United States are defined as waters that have been used in the past, are now used, or are susceptible to use as a means to transport interstate or foreign commerce up to the head of navigation. Section 10 and/or Section 404 permits are required for construction activities in these waters. Boundaries between jurisdictional waters and uplands are determined in a variety of ways depending on which type of water is present. Methods for delineating wetlands and non-tidal waters are described below.

Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" [33 C.F.R. §328.3(b)]. Presently, to be a wetland, a site must exhibit positive indicators of three wetland criteria: hydrophytic vegetation; hydric soils; and wetland hydrology existing under the "normal circumstances" for the site.

The lateral regulatory extent of non-tidal waters is determined by delineating the ordinary high water mark (OHWM) [33 C.F.R. §328.4(c)(1)]. The OHWM is defined by the Corps as "that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" [33 C.F.R. §328.3(e)].

2.2 The SWANCC Decision

The *Solid Waste Agency of Northern Cook County* v. *the U.S. Army Corps of Engineers*, 531 U.S. 159 (2001), is more commonly referred to as the SWANCC decision. SWANCC involved a challenge to CWA jurisdiction over certain isolated, intrastate, non-navigable ponds in Illinois that formerly had been gravel mine pits, but which, over time, provided habitat for migratory birds. Although these ponds served as migratory bird habitat, they were non-navigable and isolated from the tributary system of other waters regulated under the CWA. In SWANCC, the Supreme Court held that the Army Corps of Engineers had exceeded its authority in asserting CWA jurisdiction pursuant to § 404(a) over the waters at issue based on their use as habitat for migratory birds, pursuant to preamble language, commonly referred to as the Migratory Bird Rule [51 Fed. Reg. 41217 (1986)].

SWANCC squarely eliminates CWA jurisdiction over isolated waters that are intrastate and non-navigable, where the sole basis for asserting CWA jurisdiction is the actual or potential use of the waters as habitat for migratory birds that cross state lines in their migrations. CWA jurisdiction extends to waters, including wetlands, which are adjacent to navigable waters pursuant to the Supreme Court holding in Riverside Bayview Homes, which was endorsed in SWANCC as controlling law. Corps and EPA regulations currently define the term adjacent as "bordering, contiguous, or neighboring" [33 C.F.R. § 328.3(b)]. The case law on the precise scope of federal CWA jurisdiction since SWANCC is still developing.

2.3 The California Porter-Cologne Water Quality Control Act

Water quality in California is governed by the Porter-Cologne Water Quality Control Act (Porter Cologne; Ca. Water Code, Div. 7, §13000 et seq.). Under the California Porter-Cologne Water Quality Control Act, discharges to wetlands and other "waters of the state" have been and remain subject to state regulation. Under California State law, "waters of the state" are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state". This law assigns overall responsibility for water rights and water quality protection to the State Water Resource Control Board (SWRCB) and directs the nine statewide Regional Water Quality Control Boards to develop and enforce water quality standards within their boundaries.

After the Supreme Court decision in SWANCC, the Office of Chief Counsel of the SWRCB released a legal memorandum confirming the State's jurisdiction over isolated wetlands. The memorandum stated that under the California Porter-Cologne Water Quality Control Act, discharges to wetlands and other waters of the state are subject to State regulation, including isolated wetlands.

In general, the Regional Water Quality Control Boards regulate discharges to isolated waters in much the same way as they do for Federal-jurisdictional waters, using the Porter-Cologne Act rather than CWA authority.

3.0 METHODOLOGY

3.1 Site-Specific References

Available information pertaining to the natural resources of the region was reviewed. All references reviewed for this delineation are listed in **Section 6.0**. Pertinent site-specific reports and general references utilized concurrent with the delineation include the following:

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3.2 Research and Field Methodology

This delineation utilized the Corps' 1987 three-parameter (vegetation, hydrology, and soils) methodology in conjunction with the Arid West Supplement to delineate jurisdictional waters of the U.S., focusing specifically on jurisdictional wetlands. Where differences in the two documents occur, the Supplement takes precedence over the Corps Manual.

This methodology requires the collection of data on soils, vegetation, and hydrology at several locations to establish the jurisdictional boundary of wetlands. Additional methods to identify and delineate other waters of the U.S. (e.g. streams, drainages, stock ponds) were used as applicable. The method typically used for delineation of non-wetland waters of the U.S. was the delineation of the OHWM.

A review of historic and current aerial photographs, topographic maps, soils survey data, and previous wetland data collected in 2006 was conducted before delineating the site in November 2013. Biologists visually inspected the entire site and collected data on vegetation and hydrology. Soils were also examined and correlations were developed between the three parameters to make wetland determinations. Specifically, data points were evaluated to determine the composition and identification of dominant plant species. The indicator status of all dominant plant species (as determined by the 2013 National Wetland Plant List) was applied and evaluated as part of the vegetation assessment portion of the wetland determination process. Additionally, immediate subsurface soils conditions were examined for hydric attributes, or a lack thereof. Observations were made and recorded for both primary and secondary wetland hydrology indicators, if present. The location of each data point is depicted in **Figure 3** and corresponding arid west wetland determination data forms are provided in **Appendix B**.

3.3 GPS Data Integration

Boundaries of wetlands and other waters of the U.S. within the site were surveyed and mapped with a Trimble GeoXT Global Positioning System (GPS) hand-held unit. This is a mapping-grade GPS unit capable of real-time differential correction and sub-meter accuracy. The GPS data were downloaded from the unit and differentially corrected utilizing Trimble Pathfinder Office software and appropriate base station data, and then converted to ESRI ® shape file format. Data are typically exported to the Geographic Information System (GIS) software in the State Plane coordinate system (NAD 83) with units as "survey feet". Within the GIS, data are edited and linear features are built into polygons using recorded width information. All wetland shape files are merged to create a single wetland file with calculated acreages. These results are presented in **Figure 3**.

4.0 RESULTS

4.1 Site Location and Land Use

4.1.1 Site Location

The ±23-acre site is located in western El Dorado County approximately 1 mile south of State Highway 50 and immediately west of White Rock Road and south of Stonebriar Road. The westernmost edge of the site lies approximately along the El Dorado/ Sacramento County boundary line. The site is located within Section 15 of Township 9 North, Range 8 East on the USGS *Clarksville, California* 7.5-minute quadrangle map **(Figure 1)**.

4.1.2 Land Use

The majority of the site is currently fallow ranchland. Local land uses surrounding the site consist of medium- and high-density single-family residential areas and ranchland.

4.2 Physical Features

4.2.1 Soils

The Natural Resources Conservation Service (NRCS) has identified and mapped three soil units occurring on the site **(Figure 2)**: **Argonaut gravelly loam, 2 to 15 percent slopes; Auburn silt loam, 2 to 30 percent slopes**; and **Auburn very rocky silt loam, 2 to 30 percent slopes**. General characteristics and properties associated with these soils are described below.

- **Argonaut gravelly loam, 2 to 15 percent slopes**: Argonaut soils consists of moderately deep, well drained soils located on foothills from 500 feet to 1,600 feet in elevation above mean sea level (MSL). These soils formed in materials weathered from metamorphosed and intrusive basic rocks. Rock outcrops are common. This soil unit consists of occasional inclusions of Auburn silt loam and Sobrante silt loam. Permeability in this soil unit is very slow and available water capacity is unknown. This soil is typically used for annual rangeland. Vegetation in uncultivated areas mainly consists of annual grasses and forbs, with areas of oaks, foothill pine (*Pinus sabianna*), and brush scattered where conditions permit. There is one unnamed hydic soil inclusion present in this soil unit according to the hydric soils list for El Dorado County.

- **Auburn silt loam, 2 to 30 percent slopes**: Auburn soils consist of moderately deep well drained soils located on foothills from 500 feet to 1,800 feet above MSL. These soils formed in material weathered from amphibolite schist. Permeability in this soil unit is moderate and available water capacity is very low. This soil is typically used for annual rangeland with small areas used for irrigated pasture. Vegetation in uncultivated areas mainly consists of annual grasses, forbs, oaks, and scattered representations of foothill pine and brush. The hydric soils list for El Dorado County does not identify any hydric components or inclusions as present within this soil unit.

- **Auburn very rocky silt loam, 2 to 30 percent slopes**: Auburn soils consist of moderately deep well drained soils located on foothills from 500 feet to 1,800 feet above MSL. These soils formed in material weathered from amphibolite schist. Permeability in this soil unit is moderate and available water capacity is very low. This soil is typically used for annual rangeland with small areas used for irrigated pasture. Vegetation in uncultivated areas mainly consists of annual grasses, forbs, oaks, and scattered representations of foothill pine and brush. The hydric soils list for El Dorado County does not identify any hydric components or inclusions as present within this soil unit.

In summary, according to the hydric soils list and soil survey for El Dorado County, there is one unnamed hydric inclusion identified within the Argonaut soil map unit.

4.2.2 Topography

Rolling topography and moderate to steep slopes typify the site and the surrounding areas. The site is located just below the ridgeline and surface runoff primarily runs from north to south and west to east. The topography of the site is dominated by a moderately steep east-facing slope with moderate north to south undulation between approximately 520 and 610 feet above MSL. Slopes range from 3 to 12 percent.

4.2.3 Site-Specific Hydrology

Hydrologic features identified and mapped within the site include seep, depressional seasonal wetland, and ephemeral drainage (**Figure 3**). Diagnostic characteristics of the features mapped on the site are defined and discussed in **Section 4.4**.

The hydrologic regime on the site is predominantly seasonal storm water runoff and direct precipitation, which primarily falls between November and March. Annual average precipitation is approximately 15 to 20 inches. Onsite seasonal surface runoff is conveyed in sheet flow across the majority of the site. An unnamed ephemeral drainage flows from west to east across the northern half of the site. Most of the site drains to a roadside swale that drains to a storm drain inlet that is connected to the Carson Creek culvert under White Rock Road. Water from the eastern portion of the site drains to an unnamed tributary to Carson Creek. Carson Creek eventually flows south into the Cosumnes River.

There are two seeps onsite that are fed by shallow groundwater discharge. The northern seep is in the watershed of the offsite drainage. Water from the southern seep flows through the ephemeral drainage to the swale along White Rock Road.

4.3 Vegetation

California annual grassland is the dominant vegetation community within the site. This community consists of a myriad of native and non-native annual plant species and occurs in a majority of the state at elevations from sea level to approximately 4,000 feet above MSL. Composition of this vegetation community varies depending on distribution, geographic location, and land use. Additional major influences on this vegetation community include soil type, annual precipitation, and fall temperatures. Dominant plant species within the California annual grassland on the site include the following: perennial ryegrass (*Festuca perennis*), ripgus brome (*Bromus diandrus*), soft brome (*Bromus hordeaceus*), medusa head (*Taeniatherum caput-medusae*), wild oat (*Avena* sp.), chick weed (*Stellaria media*), yellow star thistle (*Centaurea solstitialis*), barley (*Hordeum murinum* ssp. *leporinum*), and clover (*Trifolium* sp.).

4.4 Classification of Waters of the United States

Jurisdictional waters of the U.S. are classified into multiple types based on topography, edaphics (soils), vegetation, and hydrologic regime. Primarily, the Corps establishes two distinctions: wetlands and non-wetland waters of the U.S. Non-wetland waters are commonly referred to as other waters. Potential jurisdictional wetland types mapped within the site include two seeps and a depressional seasonal wetland (**Figure 3**). Other potential waters of the U.S. delineated within the site include an ephemeral drainage. A description of all of the features delineated within the site is provided in the following sections.

4.4.1 Seep

A total of **0.012** acres of seep have been delineated within the site. Seeps are characterized as areas where groundwater intersects with the soil surface. Typically, flow from seeps continues for some period after the rainy season and may continue all year. Seeps can support isolated wetland vegetation (such as on a hillside) or they may form the headwaters of a riverine seasonal wetland or other jurisdictional drainage feature. Vegetation in seeps often consists of plant species associated with seasonal and perennial marsh habitats. When seeps flow for only short periods beyond the rainy season and into the warm season, herbaceous perennial wetland species typically dominate. Species observed in the seeps on site were typical of seeps in the area and include iris leaved rush (*Juncus xiphiodes*), rabbitsfoot grass (*Polypogon monspieliensis*), perennial ryegrass, and little rattlesnake grass (*Briza minor*).

4.4.2 Depressional Seasonal Wetland

A total of **0.011** acres of depressional seasonal wetlands have been delineated within the site. Seasonal wetlands are those depressions or topographic folds within the topography that inundate or flow for short periods of time following intense rains, but do not maintain seasonal aquatic or saturated soils conditions for durations long enough for colonization by perennial, obligate plant species. As such, plant species in seasonal wetlands are generally of two types: species that can tolerate short periods of inundation but have not adapted to withstand sustained aquatic or saturated soils conditions, and short-lived (primarily annual) species that take advantage of ephemeral aquatic and/or saturated soils conditions. Species observed in the seasonal wetland include Mediterranean barley (*Hordeum marinum* ssp. *Gussoneanum*) and perennial ryegrass.

4.4.3 Ephemeral Drainage

A total of **0.014** acre of ephemeral drainage has been delineated within the site. Ephemeral drainages are features that do not meet the three-parameter criteria for vegetation, hydrology, and soils but do convey water and exhibit an ordinary high water mark. Water flows within ephemeral drainages are fed primarily by precipitation and storm water run off. These features convey water during and immediately after storm events, but do not flow continuously throughout the winter and spring. Typically, these features exhibit a defined bed and bank and show signs of scouring as a result of rapid flow events. The bed of ephemeral drainages consists of cobble often interrupted with bedrock. Hydrophytic vegetation may occur in association with ephemeral drainages. The ephemeral drainages are located in the northern portion of the site and are generally associated with one of the seeps.

5.0 CONCLUSIONS

Two seeps and one depressional seasonal wetland occur on the El Dorado Springs project site. An ephemeral drainage carries water from one of the seeps to a roadside swale along White Rock Road.

Table 1 below provides acreage per class and summarizes the total acreage of estimated wetlands and water of the U.S. on the site.

Table 1 — Waters of the U.S: Acreage According to Feature Class

CLASS	TOTAL ACREAGE
Seep	0.012
Depressional Seasonal Wetland	0.011
Ephemeral Drainage	0.014
TOTAL	**0.037**

6.0 REFERENCES

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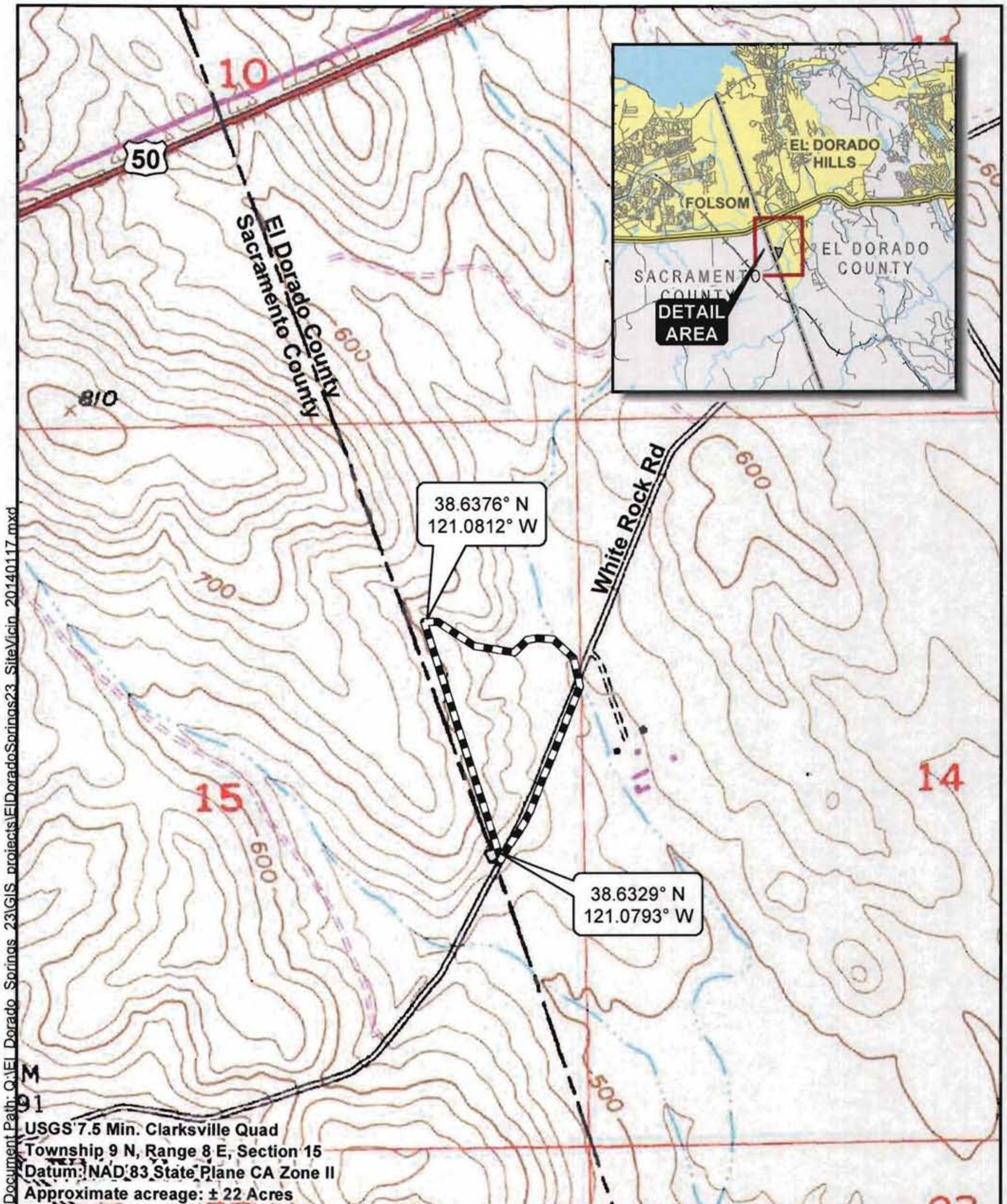

SITE AND VICINITY

FOOTHILL ASSOCIATES ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE © 2014		Drawn By: MUB Date: 01/17/2014	FIGURE 1

EL DORADO SPRINGS 23

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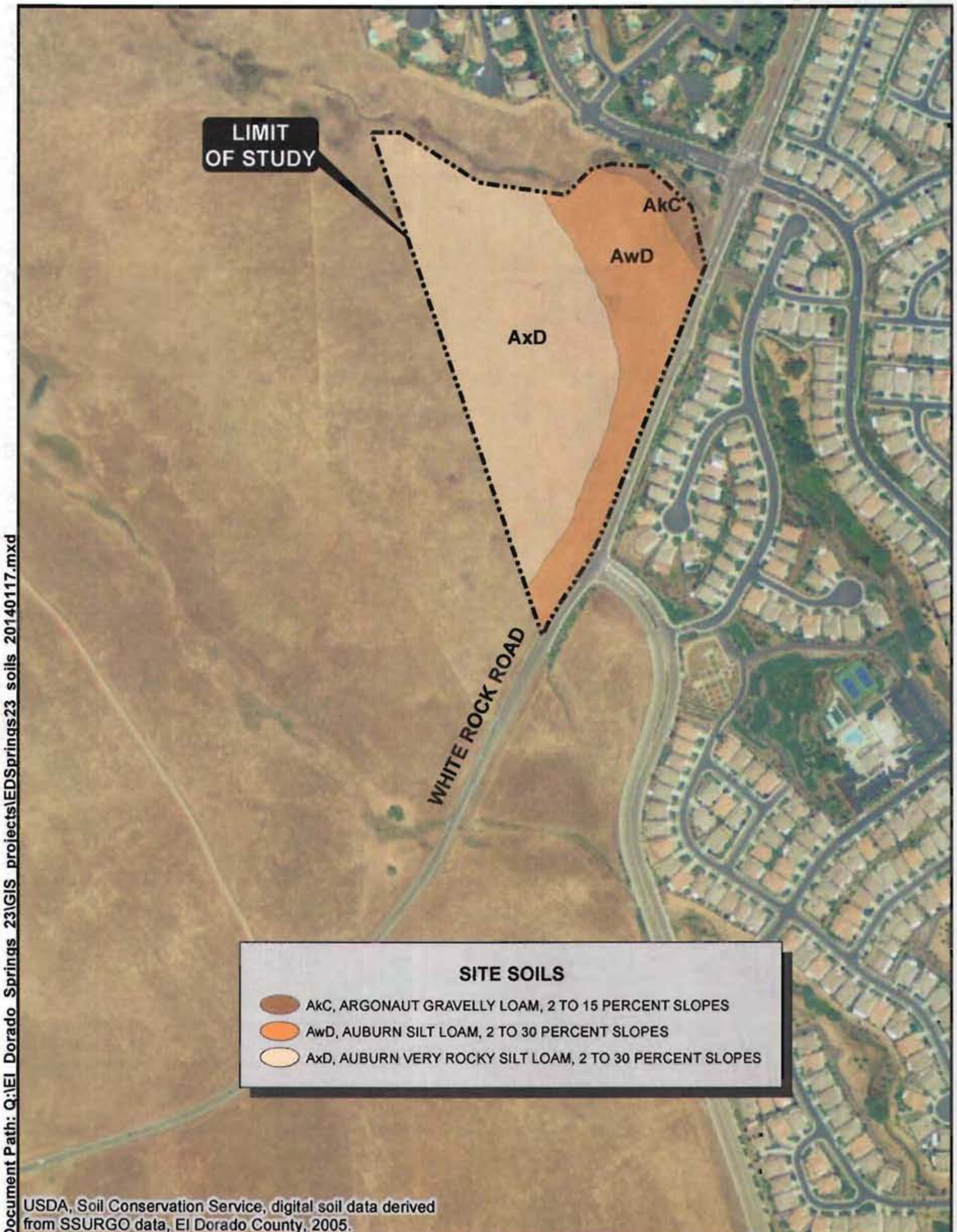

SOILS

FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

N

0 250 500
SCALE IN FEET

Drawn By: MUB
Date: 01/17/2014

FIGURE 2

EL DORADO SPRINGS 23

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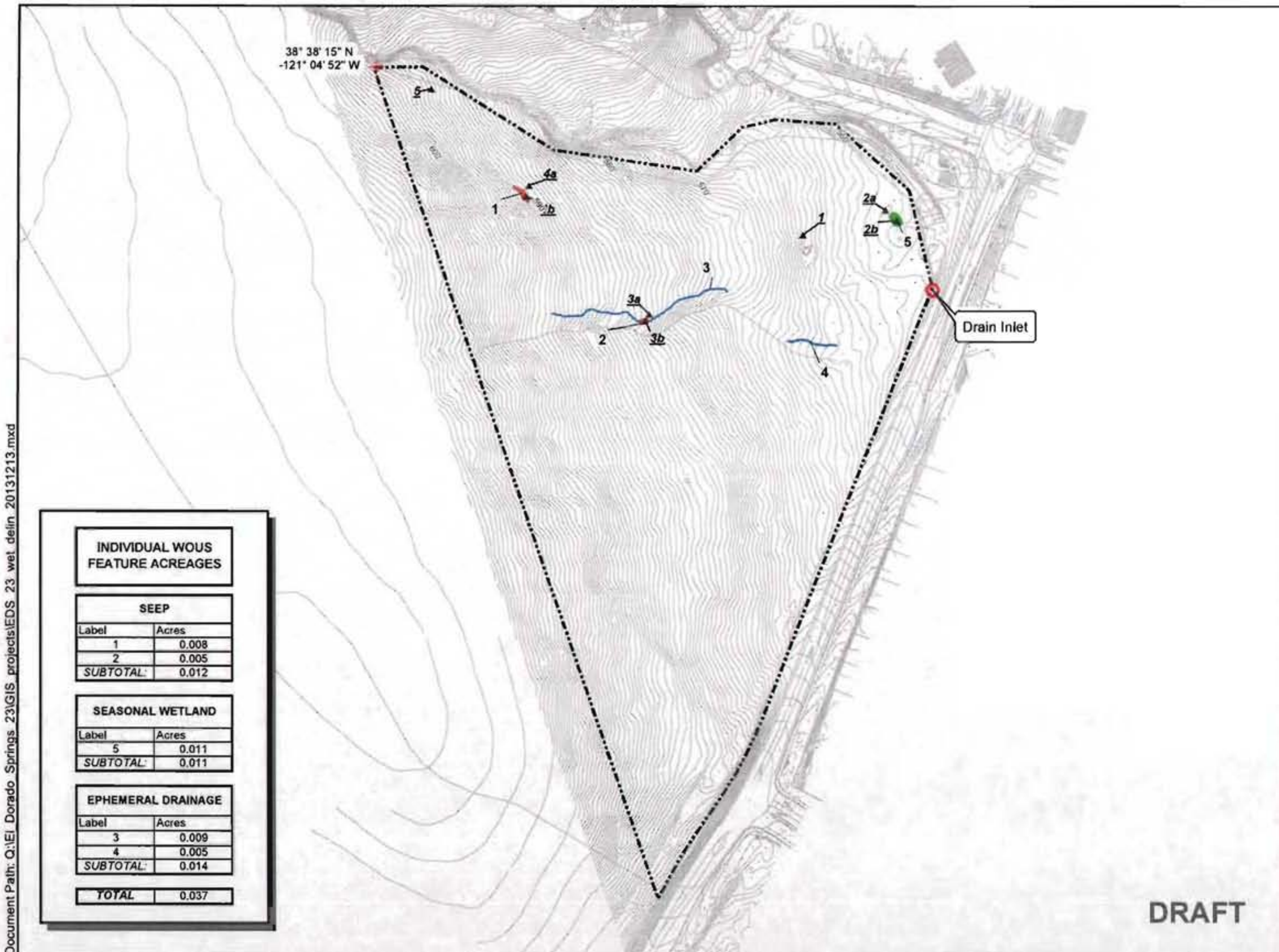

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INDIVIDUAL WOUS FEATURE ACREAGES

SEEP

Label	Acres
1	0.008
2	0.005
SUBTOTAL:	0.012

SEASONAL WETLAND

Label	Acres
5	0.011
SUBTOTAL:	0.011

EPHEMERAL DRAINAGE

Label	Acres
3	0.009
4	0.005
SUBTOTAL:	0.014

TOTAL	0.037

WATERS OF THE U.S.

CLASSIFICATION	ACREAGE
SLOPE WETLANDS	
Seep	0.012
DEPRESSIONAL WETLANDS	
Seasonal Wetland	0.011
OTHER WATERS OF THE U.S.	
Ephemeral Drainage	0.014
TOTAL	0.037

OTHER FEATURES

- Data Points
- Project Boundary
- Topographic Contour

N

0 200 400
SCALE IN FEET

FIGURE 3

NOTES

- Wetland delineation subject to U.S. Army Corps of Engineers verification.
- Contour interval is 10 feet.
- The Hydrologic Unit Code for this site is 18040013
- Study area wetlands and other waters of the U.S. were surveyed and mapped using a Trimble GPS (Global Positioning System).
- This delineation utilizes the Corps' 1987 three-parameter methodology and Rapanos guidbook 2007 and the Arid West Suplement to delineate jurisdictional waters of the U.S.

EL DORADO SPRINGS 23

WETLAND DELINEATION

FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

DATE: 04/11/2006 DELINEATED BY: JCH, KCV
REVISED: 02/10/2014 DRAWN BY: MUB

Document Name: EDS_23_wet_delin_20131213 : 2/10/2014 1:42:54 PM

Appendix A — Contact Information

Client Contact Information:

Eric Anderson
Standard Pacific Homes
3650 Industrial Boulevard, Suite 140
West Sacramento, CA 95691

Delineation Conducted by:

Kirk Vail, Biologist
Foothill Associates
590 Menlo Drive, Suite 5
Rocklin, CA 95765-3718

Appendix B — Routine Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: El Dorado Springs 23 City/County: El Dorado Sampling Date: 11/8/13

Applicant/Owner: Standard Pacific Homes State: CA Sampling Point: 1

Investigator(s): Kirk Vail Section, Township, Range: S15, T9N, R8E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 3

Subregion (LRR): C Lat: 38.63883 Long: 121.07866 Datum: NAD 83

Soil Map Unit Name: Auburn silt loam, 2 to 30 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ___	Is the Sampled Area within a Wetland? Yes ___ No ✓
Hydric Soil Present?	Yes ___ No ✓	
Wetland Hydrology Present?	Yes ___ No ✓	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. Carex sp.	80	Yes	FAC*
2. Bromus diandrus	10	No	UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	90		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

*Carex sp. assumed to be at least FAC or wetter.

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	7.5YR 3/2	100					Clay loam	
8-12	7.5YR 2.5/2	100					Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5) (**LRR C**)
- __ 1 cm Muck (A9) (**LRR D**)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1)
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- __ 1 cm Muck (A9) (**LRR C**)
- __ 2 cm Muck (A10) (**LRR B**)
- __ Reduced Vertic (F18)
- __ Red Parent Material (TF2)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ________

Depth (inches): ________

Hydric Soil Present? Yes ____ No ✓

Remarks:

No redox concentrations. Not Redox Dark Surface.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1) (**Nonriverine**)
- __ Sediment Deposits (B2) (**Nonriverine**)
- __ Drift Deposits (B3) (**Nonriverine**)
- __ Surface Soil Cracks (B6)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Water-Stained Leaves (B9)
- __ Salt Crust (B11)
- __ Biotic Crust (B12)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres along Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Plowed Soils (C6)
- __ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- __ Water Marks (B1) (**Riverine**)
- __ Sediment Deposits (B2) (**Riverine**)
- __ Drift Deposits (B3) (**Riverine**)
- __ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- __ Thin Muck Surface (C7)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Shallow Aquitard (D3)
- __ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): ______

Water Table Present? Yes ____ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Possible underground water source. No evidence observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: El Dorado Springs 23 City/County: El Dorado Sampling Date: 11/8/13

Applicant/Owner: Standard Pacific Homes State: CA Sampling Point: 2a

Investigator(s): Kirk Vail Section, Township, Range: S15, T9N, R8E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): C Lat: 38.63883 Long: 121.07866 Datum: NAD 83

Soil Map Unit Name: Auburn silt loam, 2 to 30 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓
Is the Sampled Area within a Wetland?		✓

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. Elymus caput-medusae	60	Yes	UPL
2. Centaurea solstitialis	2	No	UPL
3. Lactuca seteria	5	No	UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	67		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: 2a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	7.5YR 4/3	100					Gravel l[illegible]	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: El Dorado Springs 23 City/County: El Dorado Sampling Date: 11/8/13

Applicant/Owner: Standard Pacific Homes State: CA Sampling Point: 2b

Investigator(s): Kirk Vail Section, Township, Range: S15, T9N, R8E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): C Lat: 38.63772 Long: 121.07794 Datum: NAD 83

Soil Map Unit Name: Argonaut gravelly loam, 2 to 15 percent slopes NWI classification: Seasonal Wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. Hordeum marium ssp. gussoneaum	90	Yes	FAC
2. *Festuca perennis	5	No	FAC
3. Convolvulus arvensis	1	No	UPL
4. Eremocarpus setigerus	1	NO	UPL
5.			
6.			
7.			
8.			
Total Cover:	97		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:
*Lolium perenne

SOIL

Sampling Point: 2b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	7.5YR 3/1	60	7.5YR 3/3	40	RM	M	Clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Hard Layer

Depth (inches): 3

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No ✓	Depth (inches): ___
Water Table Present?	Yes ___	No ✓	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No ✓	Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Hard soil (compacted?). Depression.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: El Dorado Springs 23 City/County: El Dorado Sampling Date: 11/8/13

Applicant/Owner: Standard Pacific Homes State: CA Sampling Point: 3a

Investigator(s): Kirk Vail Section, Township, Range: S15, T9N, R8E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 10

Subregion (LRR): C Lat: 38.63704 Long: 121.08083 Datum: NAD 83

Soil Map Unit Name: Auburn very rocky silt loam, 2 to 30 percent slopes NWI classification: Seep

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. Holocarpha virgata	40	Yes	UPL
2. Elymus caput-medusae	20	Yes	UPL
3. Bromus hordeaceas	10	No	UPL
4. Avena sp.	60	Yes	UPL
5.			
6.			
7.			
8.			
Total Cover:	130		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ___ (A)

Total Number of Dominant Species Across All Strata: ___ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ___ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	___	x 1 = ___
FACW species	___	x 2 = ___
FAC species	___	x 3 = ___
FACU species	___	x 4 = ___
UPL species	___	x 5 = ___
Column Totals:	___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: 3a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 4/3	100					Gravelly	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5) (**LRR C**)
- __ 1 cm Muck (A9) (**LRR D**)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1)
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- __ 1 cm Muck (A9) (**LRR C**)
- __ 2 cm Muck (A10) (**LRR B**)
- __ Reduced Vertic (F18)
- __ Red Parent Material (TF2)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Hard Layer

Depth (inches): 6

Hydric Soil Present? Yes ____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1) (**Nonriverine**)
- __ Sediment Deposits (B2) (**Nonriverine**)
- __ Drift Deposits (B3) (**Nonriverine**)
- __ Surface Soil Cracks (B6)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Water-Stained Leaves (B9)
- __ Salt Crust (B11)
- __ Biotic Crust (B12)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres along Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Plowed Soils (C6)
- __ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- __ Water Marks (B1) (**Riverine**)
- __ Sediment Deposits (B2) (**Riverine**)
- __ Drift Deposits (B3) (**Riverine**)
- __ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- __ Thin Muck Surface (C7)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Shallow Aquitard (D3)
- __ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): ____

Water Table Present? Yes ____ No ✓ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: El Dorado Springs 23 City/County: El Dorado Sampling Date: 11/8/13

Applicant/Owner: Standard Pacific Homes State: CA Sampling Point: 3b

Investigator(s): Kirk Vail Section, Township, Range: S15, T9N, R8E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 10

Subregion (LRR): C Lat: 38.63704 Long: 121.08083 Datum: NAD 83

Soil Map Unit Name: Auburn very rocky silt loam, 2 to 30 percent slopes NWI classification: Seep

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation no , Soil no , or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation no , Soil no , or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ___	Is the Sampled Area within a Wetland? Yes ✓ No ___
Hydric Soil Present?	Yes ✓ No ___	
Wetland Hydrology Present?	Yes ✓ No ___	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. Juncus xiphioides	90	Yes	OBL
2. Polypogon monspielensis	15	No	FACW
3. Briza minor	10	No	FAC
4.			
5.			
6.			
7.			
8.			
Total Cover:	115		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	___	x 1 = ___
FACW species	___	x 2 = ___
FAC species	___	x 3 = ___
FACU species	___	x 4 = ___
UPL species	___	x 5 = ___
Column Totals:	___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

SOIL

Sampling Point: 3b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 4/2	90	7.5YR 4/4	10	RM	M	Gravelly	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Hard Layer

Depth (inches): 6

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: El Dorado Springs 23 City/County: El Dorado Sampling Date: 11/8/13

Applicant/Owner: Standard Pacific Homes State: CA Sampling Point: 4a

Investigator(s): Kirk Vail Section, Township, Range: S15, T9N, R8E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 10

Subregion (LRR): C Lat: 38.63849 Long: 121.08185 Datum: NAD 83

Soil Map Unit Name: Auburn very rocky silt loam, 2 to 30 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No ✓	Is the Sampled Area within a Wetland?	Yes ___ No ✓
Hydric Soil Present?	Yes ___ No ✓		
Wetland Hydrology Present?	Yes ___ No ✓		

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. Elymus caput-medusae	30	Yes	UPL
2. Bromus hordeaceus	20	Yes	FACU
3. Carduus pycnocephalus	10	No	UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	60		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ___ (A)

Total Number of Dominant Species Across All Strata: ___ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ___ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	___	x 1 = ___
FACW species	___	x 2 = ___
FAC species	___	x 3 = ___
FACU species	___	x 4 = ___
UPL species	___	x 5 = ___
Column Totals:	___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: 4a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	7.5YR 4/3	100					Gravelly	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

__ Histosol (A1)
__ Histic Epipedon (A2)
__ Black Histic (A3)
__ Hydrogen Sulfide (A4)
__ Stratified Layers (A5) **(LRR C)**
__ 1 cm Muck (A9) **(LRR D)**
__ Depleted Below Dark Surface (A11)
__ Thick Dark Surface (A12)
__ Sandy Mucky Mineral (S1)
__ Sandy Gleyed Matrix (S4)
__ Sandy Redox (S5)
__ Stripped Matrix (S6)
__ Loamy Mucky Mineral (F1)
__ Loamy Gleyed Matrix (F2)
__ Depleted Matrix (F3)
__ Redox Dark Surface (F6)
__ Depleted Dark Surface (F7)
__ Redox Depressions (F8)
__ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

__ 1 cm Muck (A9) **(LRR C)**
__ 2 cm Muck (A10) **(LRR B)**
__ Reduced Vertic (F18)
__ Red Parent Material (TF2)
__ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Rocky Layer

Depth (inches): 8

Hydric Soil Present? Yes ____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

__ Surface Water (A1)
__ High Water Table (A2)
__ Saturation (A3)
__ Water Marks (B1) **(Nonriverine)**
__ Sediment Deposits (B2) **(Nonriverine)**
__ Drift Deposits (B3) **(Nonriverine)**
__ Surface Soil Cracks (B6)
__ Inundation Visible on Aerial Imagery (B7)
__ Water-Stained Leaves (B9)
__ Salt Crust (B11)
__ Biotic Crust (B12)
__ Aquatic Invertebrates (B13)
__ Hydrogen Sulfide Odor (C1)
__ Oxidized Rhizospheres along Living Roots (C3)
__ Presence of Reduced Iron (C4)
__ Recent Iron Reduction in Plowed Soils (C6)
__ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

__ Water Marks (B1) **(Riverine)**
__ Sediment Deposits (B2) **(Riverine)**
__ Drift Deposits (B3) **(Riverine)**
__ Drainage Patterns (B10)
__ Dry-Season Water Table (C2)
__ Thin Muck Surface (C7)
__ Crayfish Burrows (C8)
__ Saturation Visible on Aerial Imagery (C9)
__ Shallow Aquitard (D3)
__ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): ____

Water Table Present? Yes ____ No ✓ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: El Dorado Springs 23 City/County: El Dorado Sampling Date: 11/8/13

Applicant/Owner: Standard Pacific Homes State: CA Sampling Point: 4b

Investigator(s): Kirk Vail Section, Township, Range: S15, T9N, R8E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 10

Subregion (LRR): C Lat: 38.63849 Long: 121.08185 Datum: NAD 83

Soil Map Unit Name: Auburn very rocky silt loam, 2 to 30 percent slopes NWI classification: Seep

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. Polypogon monspeliensis	30	Yes	FACW
2. Festuca perennis	20	No	FAC
3. Epilobium sp.	60	Yes	FAC*
4. Briza minor	15	No	FAC
5.			
6.			
7.			
8.			
Total Cover:	125		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

* Assumed FAC or wetter.

SOIL

Sampling Point: 4b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	7.5YR 4/2	90	7.5YR 4/4	10	RM	M	Gravelly	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Rocky Layer

Depth (inches): 8

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No ✓	Depth (inches): ___
Water Table Present?	Yes ___	No ✓	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No ✓	Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: El Dorado Springs 23 City/County: El Dorado Sampling Date: 11/8/13

Applicant/Owner: Standard Pacific Homes State: CA Sampling Point: 5

Investigator(s): Kirk Vail Section, Township, Range: S15, T9N, R8E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 10

Subregion (LRR): C Lat: 38.63890 Long: 121.08189 Datum: NAD 83

Soil Map Unit Name: Auburn very rocky silt loam, 2 to 30 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ___	Is the Sampled Area within a Wetland?	Yes ___ No ✓
Hydric Soil Present?	Yes ___ No ✓		
Wetland Hydrology Present?	Yes ___ No ✓		

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1. Unknown Shrub	70	Yes	Unknown
2.			
3.			
4.			
5.			
Total Cover:	70		
Herb Stratum			
1. Elymus caput-medusae	10	Yes	UPL
2. Carduus pycnocephalus	5	No	UPL
3. Carex sp.	30	Yes	FAC*
4.			
5.			
6.			
7.			
8.			
Total Cover:	45		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species	30	x 3 = 90
FACU species		x 4 =
UPL species	15	x 5 = 45
Column Totals:	45 (A)	135 (B)

Prevalence Index = B/A = 3.0

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ✓ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

* Assumed FAC or wetter.

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	7.5YR 3/1	100					Clay	No redox features

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Rocky Layer

Depth (inches): 8

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
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- ___ Hydrogen Sulfide Odor (C1)
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- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		✓	
Water Table Present?		✓	
Saturation Present? (includes capillary fringe)		✓	

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix C — Preliminary Jurisidictional Determination Form

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): March 7, 2014

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:

Foothill Associates
590 Menlo Drive, Suite 5
Rocklin, California 95765

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: CENAP-OP-R-

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State: California County: El Dorado City: El Dorado Hills
Center coordinates of site (lat/long in degree decimal format):
Lat. 38.63 ° N, Long. -121.08 ° W
Universal Transverse Mercator: m Easting (x) m Northing (y)
Name of nearest waterbody: Carson Creek

Identify (estimate) amount of waters in the review area:
Non-wetland waters: linear feet: width (ft) and/or acres.
Cowardin Class:
Stream Flow:
Wetlands: 0.037 acres.
Cowardin Class:

Name of any water bodies on the site that have been identified as Section 10 waters:
Tidal: _____
Non-Tidal:

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:
☐ Field Determination. Date(s):

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.
This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA: **Data reviewed for preliminary JD** (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

- ☐ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
- ☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☐ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps:
- ☐ Corps navigable waters' study:
- ☐ U.S. Geological Survey Hydrologic Atlas:
  - ☐ USGS NHD data.
  - ☐ USGS 8 and 12 digit HUC maps.
- ☐ U.S. Geological Survey map(s). Cite scale & quad name:
- ☐ USDA Natural Resources Conservation Service Soil Survey. Citation:
- ☐ National wetlands inventory map(s). Cite name:
- ☐ State/Local wetland inventory map(s):
- ☐ FEMA/FIRM maps:
- ☐ 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- ☐ Photographs: ☐ Aerial (Name & Date):
  ☐ Other (Name & Date):
- ☐ Previous determination(s). File no. and date of response letter:
- ☑ Other information (please specify): See Attached.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Signature and date of Regulatory Project Manager (REQUIRED)	Meredith B[...] Signature and date of person requesting preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

Delineation of Waters of the United States

El Dorado Springs ±23-Acre Site
El Dorado County, California

Prepared for:
U.S. Army Corps of Engineers

Contracted By:
Standard Pacific Homes

March 7, 2014

Submitted by:
FOOTHILL ASSOCIATES

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1.0 INTRODUCTION

The purpose of this document is to present the results of a delineation of jurisdictional waters of the United States, including wetlands, on the ±23-acre El Dorado Springs site located in western El Dorado County, California (**Figure 1**).

This report presents the results of Foothill Associates' review of available literature, aerial photographs, soil surveys (**Figure 2**), and fieldwork on the site. These results are summarized to depict jurisdictional waters of the United States following the technical guidelines provided in the *Corps Wetlands Delineation Manual* (Environmental Laboratory, 1987) and the *Arid West Regional Supplement* (Corps, 2008) for identifying wetlands and distinguishing them from aquatic habitats and other non-wetlands. The jurisdictional boundaries for other waters of the United States were identified based on the presence of an ordinary high-water mark (OHWM) as defined in 33 CFR 328.3(e).

The delineation methodology is described in this report, followed by the results of the delineation. Details regarding soils, topography, hydrology, and vegetation are summarized and routine wetland determination data forms are provided in **Appendix B**. A detailed delineation map illustrates potential waters of the U.S. on the site (**Figure 3**).

2.0 REGULATORY BACKGROUND

The U.S. Army Corps of Engineers (Corps) regulates discharge of dredged or fill material into waters of the United States under Section 404 of the Clean Water Act (CWA). "Discharges of fill material" is defined as the addition of fill material into waters of the U.S., including, but not limited to the following: placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; fill for intake and outfall pipes; and subaqueous utility lines [33 C.F.R. §328.2(f)].

Section 401 of the CWA (33 U.S.C. 1341) requires any applicant for a Federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards.

Section 404 of the Clean Water Act requires approval prior to discharging dredged or fill material into the waters of the United States. Typical activities requiring Section 404 permits are:

- Depositing of fill or dredged material in waters of the U.S. or adjacent wetlands;
- Site development fill for residential, commercial, or recreational developments;
- Construction of revetments, groins, breakwaters, levees, dams, dikes, and weirs; and
- Placement of riprap and road fills.

Section 10 of the Rivers and Harbors Act of 1899 requires approval prior to the accomplishment of any work in or over navigable waters of the United States, or which affects the course, location, condition or capacity of such waters. Typical activities requiring Section 10 permits are:

- Construction of piers, wharves, bulkheads, dolphins, marinas, ramps, floats intake structures, and cable or pipeline crossings; and
- Dredging and excavation.

Any person, firm, or agency (including Federal, State, and local government agencies) planning to work in navigable waters of the United States, or dump or place dredged or fill material in waters of the United States, must first obtain a permit from the Corps. Permits, licenses, variances, or similar authorization may also be required by other Federal, State, and local statutes.

2.1 Waters of the United States

Waters of the United States include essentially all surface waters such as all navigable waters and their tributaries, all interstate waters and their tributaries, all wetlands adjacent to these waters, and all impoundments of these waters. Navigable waters of the United States are defined as waters that have been used in the past, are now used, or are susceptible to use as a means to transport interstate or foreign commerce up to the head of navigation. Section 10 and/or Section 404 permits are required for construction activities in these waters. Boundaries between jurisdictional waters and uplands are determined in a variety of ways depending on which type of water is present. Methods for delineating wetlands and non-tidal waters are described below.

Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" [33 C.F.R. §328.3(b)]. Presently, to be a wetland, a site must exhibit positive indicators of three wetland criteria: hydrophytic vegetation; hydric soils; and wetland hydrology existing under the "normal circumstances" for the site.

The lateral regulatory extent of non-tidal waters is determined by delineating the ordinary high water mark (OHWM) [33 C.F.R. §328.4(c)(1)]. The OHWM is defined by the Corps as "that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" [33 C.F.R. §328.3(e)].

2.2 The SWANCC Decision

The *Solid Waste Agency of Northern Cook County* v. *the U.S. Army Corps of Engineers*, 531 U.S. 159 (2001), is more commonly referred to as the SWANCC decision. SWANCC involved a challenge to CWA jurisdiction over certain isolated, intrastate, non-navigable ponds in Illinois that formerly had been gravel mine pits, but which, over time, provided habitat for migratory birds. Although these ponds served as migratory bird habitat, they were non-navigable and isolated from the tributary system of other waters regulated under the CWA. In SWANCC, the Supreme Court held that the Army Corps of Engineers had exceeded its authority in asserting CWA jurisdiction pursuant to § 404(a) over the waters at issue based on their use as habitat for migratory birds, pursuant to preamble language, commonly referred to as the Migratory Bird Rule [51 Fed. Reg. 41217 (1986)].

SWANCC squarely eliminates CWA jurisdiction over isolated waters that are intrastate and non-navigable, where the sole basis for asserting CWA jurisdiction is the actual or potential use of the waters as habitat for migratory birds that cross state lines in their migrations. CWA jurisdiction extends to waters, including wetlands, which are adjacent to navigable waters pursuant to the Supreme Court holding in Riverside Bayview Homes, which was endorsed in SWANCC as controlling law. Corps and EPA regulations currently define the term adjacent as "bordering, contiguous, or neighboring" [33 C.F.R. § 328.3(b)]. The case law on the precise scope of federal CWA jurisdiction since SWANCC is still developing.

2.3 The California Porter-Cologne Water Quality Control Act

Water quality in California is governed by the Porter-Cologne Water Quality Control Act (Porter Cologne; Ca. Water Code, Div. 7, §13000 et seq.). Under the California Porter-Cologne Water Quality Control Act, discharges to wetlands and other "waters of the state" have been and remain subject to state regulation. Under California State law, "waters of the state" are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state". This law assigns overall responsibility for water rights and water quality protection to the State Water Resource Control Board (SWRCB) and directs the nine statewide Regional Water Quality Control Boards to develop and enforce water quality standards within their boundaries.

After the Supreme Court decision in SWANCC, the Office of Chief Counsel of the SWRCB released a legal memorandum confirming the State's jurisdiction over isolated wetlands. The memorandum stated that under the California Porter-Cologne Water Quality Control Act, discharges to wetlands and other waters of the state are subject to State regulation, including isolated wetlands.

In general, the Regional Water Quality Control Boards regulate discharges to isolated waters in much the same way as they do for Federal-jurisdictional waters, using the Porter-Cologne Act rather than CWA authority.

3.0 METHODOLOGY

3.1 Site-Specific References

Available information pertaining to the natural resources of the region was reviewed. All references reviewed for this delineation are listed in **Section 6.0**. Pertinent site-specific reports and general references utilized concurrent with the delineation include the following:

- Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, editors. 2012. *The Jepson manual: vascular plants of California, second edition.* University of California, Berkeley;

- Environmental Laboratory. 1987. *Corps Wetlands Delineation Manual.* U.S. Army Corps of Engineers Waterways Experiment Station. Vicksburg, MS;

- GretagMacbeth. 2000. *Munsell Soil Color Charts.* New Windsor, NY;

- Lichvar, R.W. 2013. *The National Wetland Plant List: 2013 wetland ratings.* Phytoneuron 2013-49: 1-241;

- U.S. Army Corps of Engineers (Corps). 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0).* U.S. Army Engineer Research and Development Center. Vicksburg, MS;

- U.S. Department of Agriculture (USDA), National Agriculture Imagery Program (NAIP). 2005. Color 1-meter resolution aerial photograph for El Dorado County;

- USDA, Soil Conservation Service and Forest Service. 1974. *Soil Survey of El Dorado Area, California.* USDA, Soil Conservation Service and Forest Service, in cooperation with The University of California (Agricultural Experiment Station); and

- U.S. Geological Survey. 1953 (Photorevised 1980). *Clarksville, California* 7.5-minute series topographic quadrangle. U.S. Department of the Interior.

3.2 Research and Field Methodology

This delineation utilized the Corps' 1987 three-parameter (vegetation, hydrology, and soils) methodology in conjunction with the Arid West Supplement to delineate jurisdictional waters of the U.S., focusing specifically on jurisdictional wetlands. Where differences in the two documents occur, the Supplement takes precedence over the Corps Manual.

This methodology requires the collection of data on soils, vegetation, and hydrology at several locations to establish the jurisdictional boundary of wetlands. Additional methods to identify and delineate other waters of the U.S. (e.g. streams, drainages, stock ponds) were used as applicable. The method typically used for delineation of non-wetland waters of the U.S. was the delineation of the OHWM.

A review of historic and current aerial photographs, topographic maps, soils survey data, and previous wetland data collected in 2006 was conducted before delineating the site in November 2013. Biologists visually inspected the entire site and collected data on vegetation and hydrology. Soils were also examined and correlations were developed between the three parameters to make wetland determinations. Specifically, data points were evaluated to determine the composition and identification of dominant plant species. The indicator status of all dominant plant species (as determined by the 2013 National Wetland Plant List) was applied and evaluated as part of the vegetation assessment portion of the wetland determination process. Additionally, immediate subsurface soils conditions were examined for hydric attributes, or a lack thereof. Observations were made and recorded for both primary and secondary wetland hydrology indicators, if present. The location of each data point is depicted in **Figure 3** and corresponding arid west wetland determination data forms are provided in **Appendix B**.

3.3 GPS Data Integration

Boundaries of wetlands and other waters of the U.S. within the site were surveyed and mapped with a Trimble GeoXT Global Positioning System (GPS) hand-held unit. This is a mapping-grade GPS unit capable of real-time differential correction and sub-meter accuracy. The GPS data were downloaded from the unit and differentially corrected utilizing Trimble Pathfinder Office software and appropriate base station data, and then converted to ESRI ® shape file format. Data are typically exported to the Geographic Information System (GIS) software in the State Plane coordinate system (NAD 83) with units as "survey feet". Within the GIS, data are edited and linear features are built into polygons using recorded width information. All wetland shape files are merged to create a single wetland file with calculated acreages. These results are presented in **Figure 3**.

4.0 RESULTS

4.1 Site Location and Land Use

4.1.1 Site Location

The ±23-acre site is located in western El Dorado County approximately 1 mile south of State Highway 50 and immediately west of White Rock Road and south of Stonebriar Road. The westernmost edge of the site lies approximately along the El Dorado/ Sacramento County boundary line. The site is located within Section 15 of Township 9 North, Range 8 East on the USGS *Clarksville, California* 7.5-minute quadrangle map **(Figure 1)**.

4.1.2 Land Use

The majority of the site is currently fallow ranchland. Local land uses surrounding the site consist of medium- and high-density single-family residential areas and ranchland.

4.2 Physical Features

4.2.1 Soils

The Natural Resources Conservation Service (NRCS) has identified and mapped three soil units occurring on the site **(Figure 2)**: **Argonaut gravelly loam, 2 to 15 percent slopes; Auburn silt loam, 2 to 30 percent slopes**; and **Auburn very rocky silt loam, 2 to 30 percent slopes**. General characteristics and properties associated with these soils are described below.

- **Argonaut gravelly loam, 2 to 15 percent slopes**: Argonaut soils consists of moderately deep, well drained soils located on foothills from 500 feet to 1,600 feet in elevation above mean sea level (MSL). These soils formed in materials weathered from metamorphosed and intrusive basic rocks. Rock outcrops are common. This soil unit consists of occasional inclusions of Auburn silt loam and Sobrante silt loam. Permeability in this soil unit is very slow and available water capacity is unknown. This soil is typically used for annual rangeland. Vegetation in uncultivated areas mainly consists of annual grasses and forbs, with areas of oaks, foothill pine (*Pinus sabianna*), and brush scattered where conditions permit. There is one unnamed hydic soil inclusion present in this soil unit according to the hydric soils list for El Dorado County.

- **Auburn silt loam, 2 to 30 percent slopes**: Auburn soils consist of moderately deep well drained soils located on foothills from 500 feet to 1,800 feet above MSL. These soils formed in material weathered from amphibolite schist. Permeability in this soil unit is moderate and available water capacity is very low. This soil is typically used for annual rangeland with small areas used for irrigated pasture. Vegetation in uncultivated areas mainly consists of annual grasses, forbs, oaks, and scattered representations of foothill pine and brush. The hydric soils list for El Dorado County does not identify any hydric components or inclusions as present within this soil unit.

- **Auburn very rocky silt loam, 2 to 30 percent slopes**: Auburn soils consist of moderately deep well drained soils located on foothills from 500 feet to 1,800 feet above MSL. These soils formed in material weathered from amphibolite schist. Permeability in this soil unit is moderate and available water capacity is very low. This soil is typically used for annual rangeland with small areas used for irrigated pasture. Vegetation in uncultivated areas mainly consists of annual grasses, forbs, oaks, and scattered representations of foothill pine and brush. The hydric soils list for El Dorado County does not identify any hydric components or inclusions as present within this soil unit.

In summary, according to the hydric soils list and soil survey for El Dorado County, there is one unnamed hydric inclusion identified within the Argonaut soil map unit.

4.2.2 Topography

Rolling topography and moderate to steep slopes typify the site and the surrounding areas. The site is located just below the ridgeline and surface runoff primarily runs from north to south and west to east. The topography of the site is dominated by a moderately steep east-facing slope with moderate north to south undulation between approximately 520 and 610 feet above MSL. Slopes range from 3 to 12 percent.

4.2.3 Site-Specific Hydrology

Hydrologic features identified and mapped within the site include seep, depressional seasonal wetland, and ephemeral drainage (**Figure 3**). Diagnostic characteristics of the features mapped on the site are defined and discussed in **Section 4.4**.

The hydrologic regime on the site is predominantly seasonal storm water runoff and direct precipitation, which primarily falls between November and March. Annual average precipitation is approximately 15 to 20 inches. Onsite seasonal surface runoff is conveyed in sheet flow across the majority of the site. An unnamed ephemeral drainage flows from west to east across the northern half of the site. Most of the site drains to a roadside swale that drains to a storm drain inlet that is connected to the Carson Creek culvert under White Rock Road. Water from the eastern portion of the site drains to an unnamed tributary to Carson Creek. Carson Creek eventually flows south into the Cosumnes River.

There are two seeps onsite that are fed by shallow groundwater discharge. The northern seep is in the watershed of the offsite drainage. Water from the southern seep flows through the ephemeral drainage to the swale along White Rock Road.

4.3 Vegetation

California annual grassland is the dominant vegetation community within the site. This community consists of a myriad of native and non-native annual plant species and occurs in a majority of the state at elevations from sea level to approximately 4,000 feet above MSL. Composition of this vegetation community varies depending on distribution, geographic location, and land use. Additional major influences on this vegetation community include soil type, annual precipitation, and fall temperatures. Dominant plant species within the California annual grassland on the site include the following: perennial ryegrass (*Festuca perennis*), ripgus brome (*Bromus diandrus*), soft brome (*Bromus hordeaceus*), medusa head (*Taeniatherum caput-medusae*), wild oat (*Avena* sp.), chick weed (*Stellaria media*), yellow star thistle (*Centaurea solstitialis*), barley (*Hordeum murinum* ssp. *leporinum*), and clover (*Trifolium* sp.).

4.4 Classification of Waters of the United States

Jurisdictional waters of the U.S. are classified into multiple types based on topography, edaphics (soils), vegetation, and hydrologic regime. Primarily, the Corps establishes two distinctions: wetlands and non-wetland waters of the U.S. Non-wetland waters are commonly referred to as other waters. Potential jurisdictional wetland types mapped within the site include two seeps and a depressional seasonal wetland (**Figure 3**). Other potential waters of the U.S. delineated within the site include an ephemeral drainage. A description of all of the features delineated within the site is provided in the following sections.

4.4.1 Seep

A total of **0.012** acres of seep have been delineated within the site. Seeps are characterized as areas where groundwater intersects with the soil surface. Typically, flow from seeps continues for some period after the rainy season and may continue all year. Seeps can support isolated wetland vegetation (such as on a hillside) or they may form the headwaters of a riverine seasonal wetland or other jurisdictional drainage feature. Vegetation in seeps often consists of plant species associated with seasonal and perennial marsh habitats. When seeps flow for only short periods beyond the rainy season and into the warm season, herbaceous perennial wetland species typically dominate. Species observed in the seeps on site were typical of seeps in the area and include iris leaved rush (*Juncus xiphiodes*), rabbitsfoot grass (*Polypogon monspieliensis*), perennial ryegrass, and little rattlesnake grass (*Briza minor*).

4.4.2 Depressional Seasonal Wetland

A total of **0.011** acres of depressional seasonal wetlands have been delineated within the site. Seasonal wetlands are those depressions or topographic folds within the topography that inundate or flow for short periods of time following intense rains, but do not maintain seasonal aquatic or saturated soils conditions for durations long enough for colonization by perennial, obligate plant species. As such, plant species in seasonal wetlands are generally of two types: species that can tolerate short periods of inundation but have not adapted to withstand sustained aquatic or saturated soils conditions, and short-lived (primarily annual) species that take advantage of ephemeral aquatic and/or saturated soils conditions. Species observed in the seasonal wetland include Mediterranean barley (*Hordeum marinum* ssp. *Gussoneanum*) and perennial ryegrass.

4.4.3 Ephemeral Drainage

A total of **0.014** acre of ephemeral drainage has been delineated within the site. Ephemeral drainages are features that do not meet the three-parameter criteria for vegetation, hydrology, and soils but do convey water and exhibit an ordinary high water mark. Water flows within ephemeral drainages are fed primarily by precipitation and storm water run off. These features convey water during and immediately after storm events, but do not flow continuously throughout the winter and spring. Typically, these features exhibit a defined bed and bank and show signs of scouring as a result of rapid flow events. The bed of ephemeral drainages consists of cobble often interrupted with bedrock. Hydrophytic vegetation may occur in association with ephemeral drainages. The ephemeral drainages are located in the northern portion of the site and are generally associated with one of the seeps.

5.0 CONCLUSIONS

Two seeps and one depressional seasonal wetland occur on the El Dorado Springs project site. An ephemeral drainage carries water from one of the seeps to a roadside swale along White Rock Road.

Table 1 below provides acreage per class and summarizes the total acreage of estimated wetlands and water of the U.S. on the site.

Table 1 — Waters of the U.S: Acreage According to Feature Class

CLASS	TOTAL ACREAGE
Seep	0.012
Depressional Seasonal Wetland	0.011
Ephemeral Drainage	0.014
TOTAL	**0.037**

6.0 REFERENCES

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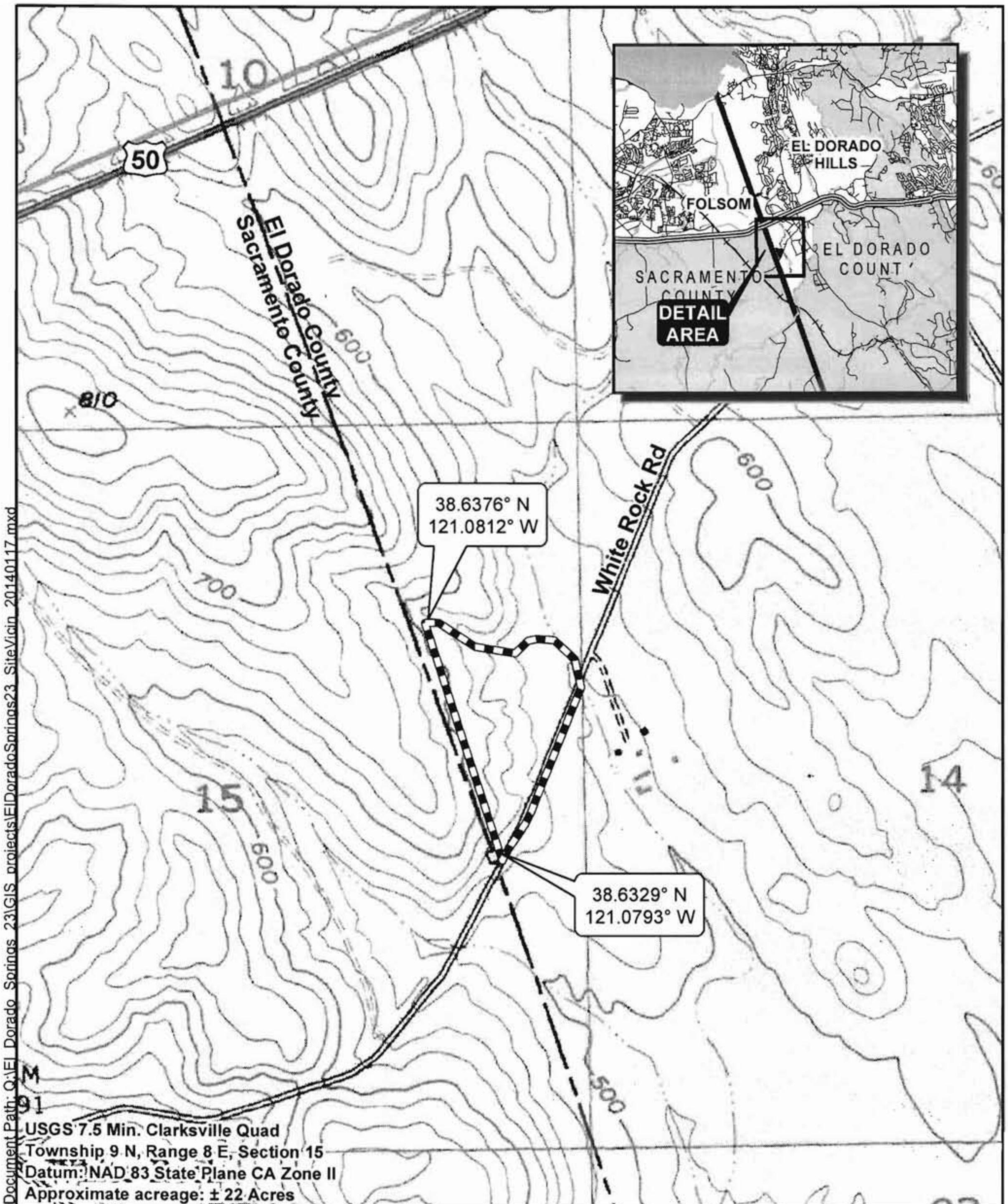

SITE AND VICINITY

FOOTHILL ASSOCIATES ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE © 2014	N	0 470 940 FEET 1 inch = 1,000 feet	Drawn By: MUB Date: 01/17/2014	FIGURE 1

EL DORADO SPRINGS 23

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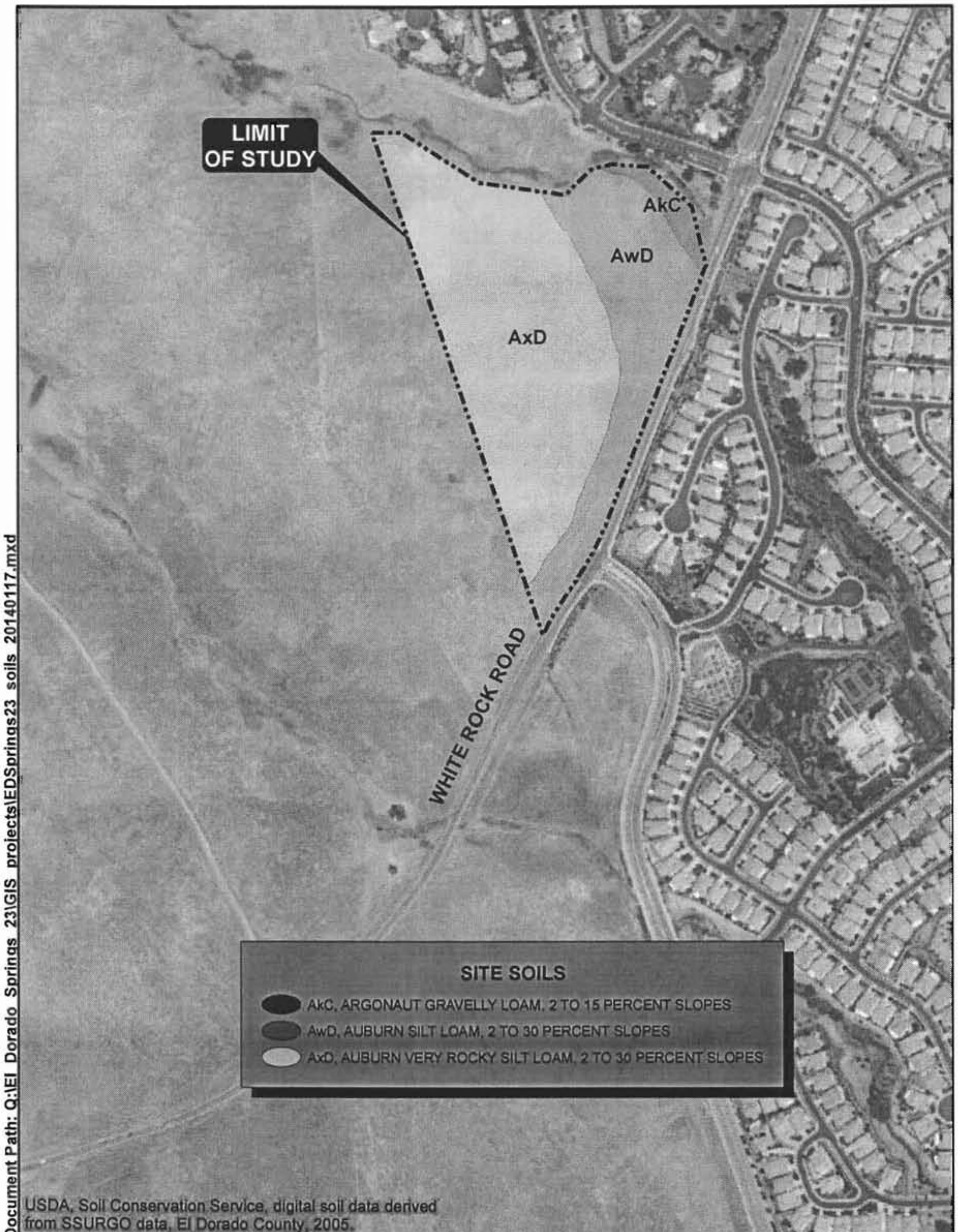

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SOILS

FOOTHILL ASSOCIATES
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N

0 250 500
SCALE IN FEET

Drawn By: MUB
Date: 01/17/2014

FIGURE 2

EL DORADO SPRINGS 23

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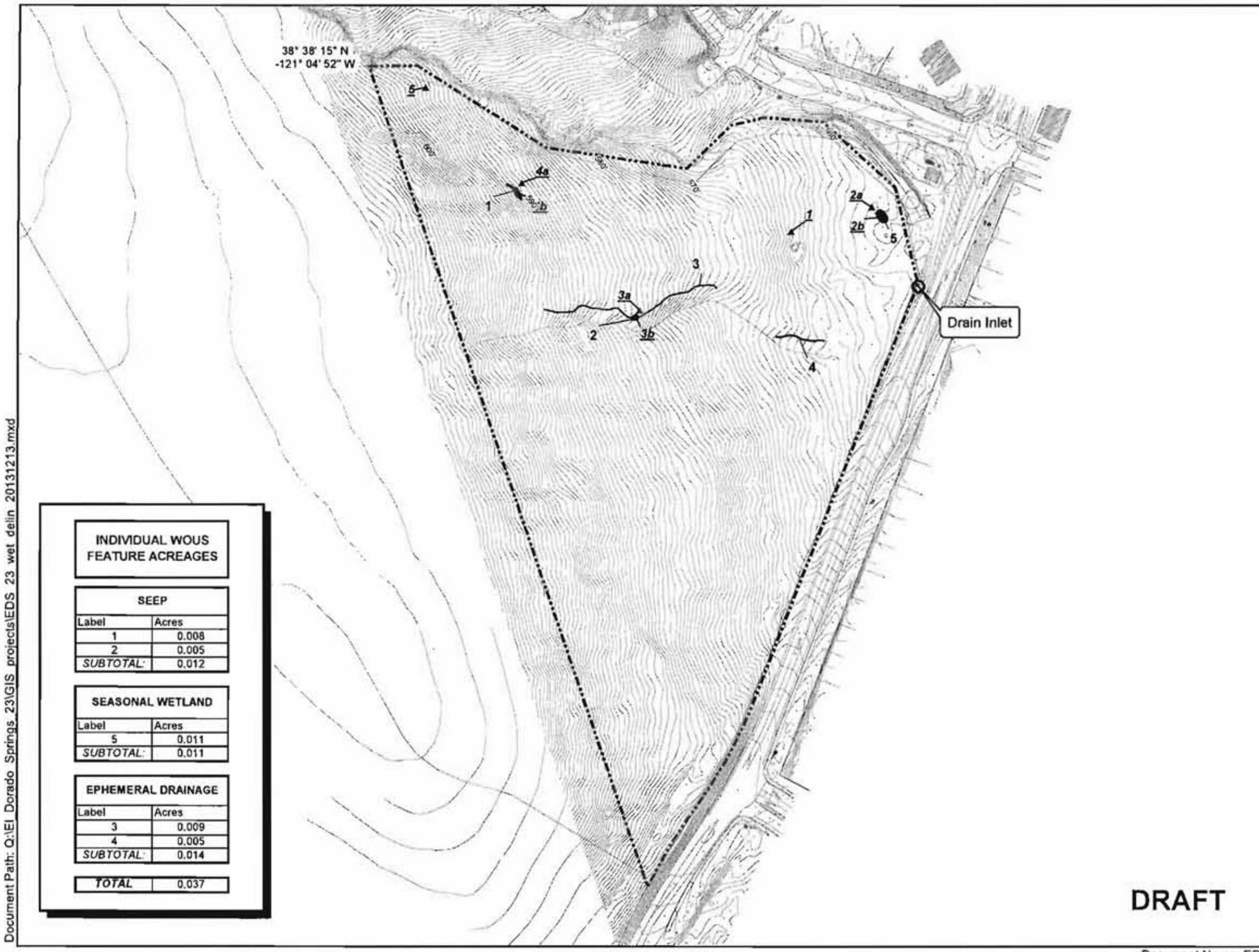

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INDIVIDUAL WOUS FEATURE ACREAGES

SEEP	
Label	Acres
1	0.008
2	0.005
SUBTOTAL:	0.012

SEASONAL WETLAND	
Label	Acres
5	0.011
SUBTOTAL:	0.011

EPHEMERAL DRAINAGE	
Label	Acres
3	0.009
4	0.005
SUBTOTAL:	0.014

TOTAL	0.037

WATERS OF THE U.S.

CLASSIFICATION	ACREAGE
SLOPE WETLANDS	
Seep	0.012
DEPRESSIONAL WETLANDS	
Seasonal Wetland	0.011
OTHER WATERS OF THE U.S.	
Ephemeral Drainage	0.014
TOTAL	0.037

OTHER FEATURES

- Xa Data Points
- Project Boundary
- Topographic Contour

N

0 200 400

SCALE IN FEET

FIGURE 3

NOTES

- Wetland delineation subject to U.S. Army Corps of Engineers verification.
- Contour interval is 10 feet.
- The Hydrologic Unit Code for this site is 18040013
- Study area wetlands and other waters of the U.S. were surveyed and mapped using a Trimble GPS (Global Positioning System).
- This delineation utilizes the Corps' 1987 three-parameter methodology and Rapanos guidbook 2007 and the Arid West Suplement to delineate jurisdictional waters of the U.S.

EL DORADO SPRINGS 23

WETLAND DELINEATION

FOOTHILL ASSOCIATES

ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

DATE: 04/11/2006 DELINEATED BY: JCH, KCV
REVISED: 02/10/2014 DRAWN BY: MUB

Document Name: EDS_23_wet_delin_20131213 : 2/10/2014 1:42:54 PM

Appendix A — Contact Information

Client Contact Information:

Eric Anderson
Standard Pacific Homes
3650 Industrial Boulevard, Suite 140
West Sacramento, CA 95691

Delineation Conducted by:

Kirk Vail, Biologist
Foothill Associates
590 Menlo Drive, Suite 5
Rocklin, CA 95765-3718

Appendix B — Routine Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: El Dorado Springs 23 City/County: El Dorado Sampling Date: 11/8/13

Applicant/Owner: Standard Pacific Homes State: CA Sampling Point: 1

Investigator(s): Kirk Vail Section, Township, Range: S15, T9N, R8E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 3

Subregion (LRR): C Lat: 38.63883 Long: 121.07866 Datum: NAD 83

Soil Map Unit Name: Auburn silt loam, 2 to 30 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ___	Is the Sampled Area within a Wetland? Yes ___ No ✓
Hydric Soil Present?	Yes ___ No ✓	
Wetland Hydrology Present?	Yes ___ No ✓	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. Carex sp.	80	Yes	FAC*
2. Bromus diandrus	10	No	UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	90		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum ______ % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

*Carex sp. assumed to be at least FAC or wetter.

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	7.5YR 3/2	100					Clay loam	
8-12	7.5YR 2.5/2	100					Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ______________

Depth (inches): ______________

Hydric Soil Present? Yes ______ No ✓

Remarks:

No redox concentrations. Not Redox Dark Surface.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______________

Water Table Present? Yes ______ No ✓ Depth (inches): ______________

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______________

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Possible underground water source. No evidence observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: El Dorado Springs 23 City/County: El Dorado Sampling Date: 11/8/13

Applicant/Owner: Standard Pacific Homes State: CA Sampling Point: 2a

Investigator(s): Kirk Vail Section, Township, Range: S15, T9N, R8E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): C Lat: 38.63883 Long: 121.07866 Datum: NAD 83

Soil Map Unit Name: Auburn silt loam, 2 to 30 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland?	Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓		
Wetland Hydrology Present?	Yes ____	No ✓		

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. Elymus caput-medusae	60	Yes	UPL
2. Centaurea solstitialis	2	No	UPL
3. Lactuca seteria	5	No	UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	67		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	____	x 1 = ____
FACW species	____	x 2 = ____
FAC species	____	x 3 = ____
FACU species	____	x 4 = ____
UPL species	____	x 5 = ____
Column Totals:	____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 2a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	7.5YR 4/3	100					Gravel l	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes ______ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ______	No ✓	Depth (inches): ______
Water Table Present?	Yes ______	No ✓	Depth (inches): ______
Saturation Present? (includes capillary fringe)	Yes ______	No ✓	Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: El Dorado Springs 23 City/County: El Dorado Sampling Date: 11/8/13

Applicant/Owner: Standard Pacific Homes State: CA Sampling Point: 2b

Investigator(s): Kirk Vail Section, Township, Range: S15, T9N, R8E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): C Lat: 38.63772 Long: 121.07794 Datum: NAD 83

Soil Map Unit Name: Argonaut gravelly loam, 2 to 15 percent slopes NWI classification: Seasonal Wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ✓ No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____	
Hydric Soil Present? Yes ✓ No ____		
Wetland Hydrology Present? Yes ✓ No ____		

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. Hordeum marium ssp. gussoneaum	90	Yes	FAC
2. *Festuca perennis	5	No	FAC
3. Convolvulus arvensis	1	No	UPL
4. Eremocarpus setigerus	1	NO	UPL
5.			
6.			
7.			
8.			
Total Cover:	97		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	____	x 1 = ____
FACW species	____	x 2 = ____
FAC species	____	x 3 = ____
FACU species	____	x 4 = ____
UPL species	____	x 5 = ____
Column Totals:	____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:
*Lolium perenne

SOIL

Sampling Point: 2b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	7.5YR 3/1	60	7.5YR 3/3	40	RM	M	Clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Hard Layer

Depth (inches): 3

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Hard soil (compacted?). Depression.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: El Dorado Springs 23 City/County: El Dorado Sampling Date: 11/8/13

Applicant/Owner: Standard Pacific Homes State: CA Sampling Point: 3a

Investigator(s): Kirk Vail Section, Township, Range: S15, T9N, R8E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 10

Subregion (LRR): C Lat: 38.63704 Long: 121.08083 Datum: NAD 83

Soil Map Unit Name: Auburn very rocky silt loam, 2 to 30 percent slopes NWI classification: Seep

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No ✓	Is the Sampled Area within a Wetland? Yes ___ No ✓
Hydric Soil Present?	Yes ___ No ✓	
Wetland Hydrology Present?	Yes ___ No ✓	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. Holocarpha virgata	40	Yes	UPL
2. Elymus caput-medusae	20	Yes	UPL
3. Bromus hordeaceas	10	No	UPL
4. Avena sp.	60	Yes	UPL
5.			
6.			
7.			
8.			
Total Cover:	130		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ___ (A)

Total Number of Dominant Species Across All Strata: ___ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ___ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ___	x 1 = ___
FACW species ___	x 2 = ___
FAC species ___	x 3 = ___
FACU species ___	x 4 = ___
UPL species ___	x 5 = ___
Column Totals: ___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: 3a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 4/3	100					Gravelly	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Hard Layer

Depth (inches): 6

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: El Dorado Springs 23 City/County: El Dorado Sampling Date: 11/8/13

Applicant/Owner: Standard Pacific Homes State: CA Sampling Point: 3b

Investigator(s): Kirk Vail Section, Township, Range: S15, T9N, R8E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 10

Subregion (LRR): C Lat: 38.63704 Long: 121.08083 Datum: NAD 83

Soil Map Unit Name: Auburn very rocky silt loam, 2 to 30 percent slopes NWI classification: Seep

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ___	Is the Sampled Area within a Wetland? Yes ✓ No ___
Hydric Soil Present?	Yes ✓ No ___	
Wetland Hydrology Present?	Yes ✓ No ___	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. Juncus xiphioides	90	Yes	OBL
2. Polypogon monspielensis	15	No	FACW
3. Briza minor	10	No	FAC
4.			
5.			
6.			
7.			
8.			
Total Cover:	115		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

SOIL

Sampling Point: 3b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 4/2	90	7.5YR 4/4	10	RM	M	Gravelly	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Hard Layer

Depth (inches): 6

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No ✓	Depth (inches): ___
Water Table Present?	Yes ___	No ✓	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No ✓	Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: El Dorado Springs 23 City/County: El Dorado Sampling Date: 11/8/13

Applicant/Owner: Standard Pacific Homes State: CA Sampling Point: 4a

Investigator(s): Kirk Vail Section, Township, Range: S15, T9N, R8E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 10

Subregion (LRR): C Lat: 38.63849 Long: 121.08185 Datum: NAD 83

Soil Map Unit Name: Auburn very rocky silt loam, 2 to 30 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓
Is the Sampled Area within a Wetland?		✓

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. Elymus caput-medusae	30	Yes	UPL
2. Bromus hordeaceus	20	Yes	FACU
3. Carduus pycnocephalus	10	No	UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	60		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)

Total Number of Dominant Species Across All Strata: ____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 4a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	7.5YR 4/3	100					Gravelly	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Rocky Layer

Depth (inches): 8

Hydric Soil Present? Yes ______ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______

Water Table Present? Yes ______ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: El Dorado Springs 23 City/County: El Dorado Sampling Date: 11/8/13

Applicant/Owner: Standard Pacific Homes State: CA Sampling Point: 4b

Investigator(s): Kirk Vail Section, Township, Range: S15, T9N, R8E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 10

Subregion (LRR): C Lat: 38.63849 Long: 121.08185 Datum: NAD 83

Soil Map Unit Name: Auburn very rocky silt loam, 2 to 30 percent slopes NWI classification: Seep

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ___	Is the Sampled Area within a Wetland? Yes ✓ No ___
Hydric Soil Present?	Yes ✓ No ___	
Wetland Hydrology Present?	Yes ✓ No ___	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. Polypogon monspeliensis	30	Yes	FACW
2. Festuca perennis	20	No	FAC
3. Epilobium sp.	60	Yes	FAC*
4. Briza minor	15	No	FAC
5.			
6.			
7.			
8.			
Total Cover:	125		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	___	x 1 = ___
FACW species	___	x 2 = ___
FAC species	___	x 3 = ___
FACU species	___	x 4 = ___
UPL species	___	x 5 = ___
Column Totals:	___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

* Assumed FAC or wetter.

SOIL

Sampling Point: 4b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	7.5YR 4/2	90	7.5YR 4/4	10	RM	M	Gravelly	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Rocky Layer

Depth (inches): 8

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: El Dorado Springs 23 City/County: El Dorado Sampling Date: 11/8/13

Applicant/Owner: Standard Pacific Homes State: CA Sampling Point: 5

Investigator(s): Kirk Vail Section, Township, Range: S15, T9N, R8E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 10

Subregion (LRR): C Lat: 38.63890 Long: 121.08189 Datum: NAD 83

Soil Map Unit Name: Auburn very rocky silt loam, 2 to 30 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ___	Is the Sampled Area within a Wetland? Yes ___ No ✓
Hydric Soil Present?	Yes ___ No ✓	
Wetland Hydrology Present?	Yes ___ No ✓	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1. Unknown Shrub	70	Yes	Unknown
2.			
3.			
4.			
5.			
Total Cover:	70		
Herb Stratum			
1. Elymus caput-medusae	10	Yes	UPL
2. Carduus pycnocephalus	5	No	UPL
3. Carex sp.	30	Yes	FAC*
4.			
5.			
6.			
7.			
8.			
Total Cover:	45		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species	30	x 3 = 90
FACU species		x 4 =
UPL species	15	x 5 = 45
Column Totals:	45 (A)	135 (B)

Prevalence Index = B/A = 3.0

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ✓ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

* Assumed FAC or wetter.

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	7.5YR 3/1	100					Clay	No redox features

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
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- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
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- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Rocky Layer

Depth (inches): 8

Hydric Soil Present? Yes ______ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): ____________

Water Table Present? Yes _____ No ✓ Depth (inches): ____________

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): ____________

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix C — Preliminary Jurisidictional Determination Form

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): March 7, 2014

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:

Foothill Associates
590 Menlo Drive, Suite 5
Rocklin, California 95765

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: CENAP-OP-R-

**D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)**

State: California County: El Dorado City: El Dorado Hills
Center coordinates of site (lat/long in degree decimal format):
Lat. 38.63 ° N, Long. -121.08 ° W
Universal Transverse Mercator: m Easting (x) m Northing (y)
Name of nearest waterbody: Carson Creek

Identify (estimate) amount of waters in the review area:
Non-wetland waters: linear feet: width (ft) and/or acres.
Cowardin Class:
Stream Flow:
Wetlands: 0.037 acres.
Cowardin Class:

Name of any water bodies on the site that have been identified as Section 10 waters:
Tidal:
Non-Tidal:

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:
☐ Field Determination. Date(s):

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.
This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA: Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

- ☐ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
- ☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☐ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps:
- ☐ Corps navigable waters' study:
- ☐ U.S. Geological Survey Hydrologic Atlas:
  - ☐ USGS NHD data.
  - ☐ USGS 8 and 12 digit HUC maps.
- ☐ U.S. Geological Survey map(s). Cite scale & quad name:
- ☐ USDA Natural Resources Conservation Service Soil Survey. Citation:
- ☐ National wetlands inventory map(s). Cite name:
- ☐ State/Local wetland inventory map(s):
- ☐ FEMA/FIRM maps:
- ☐ 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- ☐ Photographs: ☐ Aerial (Name & Date):
  ☐ Other (Name & Date):
- ☐ Previous determination(s). File no. and date of response letter:
- ☑ Other information (please specify): See Attached.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Signature and date of Regulatory Project Manager (REQUIRED)	Meredith Bittner Signature and date of person requesting preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

EL DORADO SPRINGS 23

Cultural Resources Inventory and Evaluation
El Dorado County, California

Section 15 , T. 9N, R. 8E MDM
Clarksville, Calif. 7.5' USGS Quadrangle
Approximately 25 Acres

Prepared By
Ric Windmiller, R.P.A.

Ric Windmiller
Consulting Archaeologist
2280 Grass Valley Hwy. #205
Auburn, California 95603

Prepared For
Foothill Associates, Inc.
590 Menlo Park Drive, Suite 5
Rocklin, California 95765

July, 2014

ATTACHMENT 7

MANAGEMENT SUMMARY

El Dorado Springs 23 is a proposed residential development located along White Rock Road near the El Dorado-Sacramento county line in El Dorado County, California. The proposed development will consist of 49 single family residential lots on 21.65 acres. The project will be served by public water and sewer from the El Dorado Irrigation District. The Area of Potential Effect (APE) encompasses adjacent White Rock Road, which brings the total land within the APE to approximately 25 acres.

To help meet the requirements for a Clean Water Action, Section 404 permit, the U.S. Army Corps of Engineers must conduct a National Historic Preservation Act, Section 106 consultation. To assist the Corps in meeting its obligations under Section 106, Ric Windmiller, Consulting Archaeologist conducted an updated cultural resources study encompassing the project's APE. A records search was conducted by the North Central Information Center, California Historical Resources Information System. The Native American Heritage Commission provided a search of its sacred lands file and list of Native American contacts. We made several attempts to contact each individual/organization listed by the commission. As the project site had been previously inspected for cultural resources, we conducted an archaeological field reconnaissance of the same area and an intensive field inspection of that portion of the APE not previously inspected .

As a result of the above efforts, one isolated bedrock mortar station was identified on the project site. While it is likely that this isolated find will be impacted by the project, the bedrock mortar station is not eligible for the National Register under any criterion.

A portion of the concrete White Rock Road, recorded as P-9-809/CA-ELD-721H, and whose various segments elsewhere have been previously determined eligible as well as ineligible for the National Register of Historic Places, lies capped with asphalt within the APE. The proposed project includes installing a water line that would have cut into the capped historic concrete roadway. However, the water line is planned for a location where the concrete roadway was removed during a previous road widening project. Therefore, it is not anticipated that the capped concrete roadway would be impacted by the proposed undertaking. Therefore, it is our opinion that the proposed undertaking will not affect nor have an adverse effect on historic properties.

CONTENTS

LIST OF FIGURES

INTRODUCTION

El Dorado Springs 23 is a proposed residential development located along White Rock Road near the El Dorado-Sacramento county line in El Dorado County, California (see figures 1 and 2, below). The proposed development will consist of 49 single family residential lots on 21.65 acres. The project will be served by public water and sewer from the El Dorado Irrigation District.

To help meet the requirements for a Clean Water Action, Section 404 permit, the U.S. Army Corps of Engineers must conduct a National Historic Preservation Act, Section 106 consultation. The purpose of the present study is to assist the Corps in meeting its responsibilities under Section 106. A Section 106 consultation is a federal review, separate from any environmental or planning reviews required by state and local laws and ordinances. The purpose of Section 106 is to avoid unnecessary harm to historic properties, which include any National Register of Historic Places listed or eligible prehistoric or historic objects, sites, buildings, structures or districts (National Park Service 1991: Appendix IV-2). Under federal regulations at 36 CFR Part 800, effective January 11, 2001, the basic steps in a Section 106 review include:

- **Initiating the Section 106 process** (This step was added in 1999 to encourage early consideration of the potential effects of the federal permitting or other action, to coordinate with other reviews, to identify consulting parties such as the State Historic Preservation Officer and Federally recognized Indian tribes, and to make plans for other public involvement);

- **Identifying historic properties** (the federal agency is responsible for defining the Area or Areas of Potential Effects; also included in this step is the identification of cultural resources, evaluating the eligibility of those resources for the National Register, including sites to which Indian tribes attach religious and cultural significance, determining the eligibility of those resources for the National Register and determining whether or not historic properties will be affected);

- **Assessing Adverse Effects** (the federal agency must consider both direct and indirect effects, reasonably foreseeable effects that are cumulative, later in time or at a distance, and with respect to all qualifying characteristics of a historic property--*e.g.*, if an archaeological site is important for its scientific information potential and for its cultural or religious importance to an Indian tribe, then the adverse effects on both must be considered)

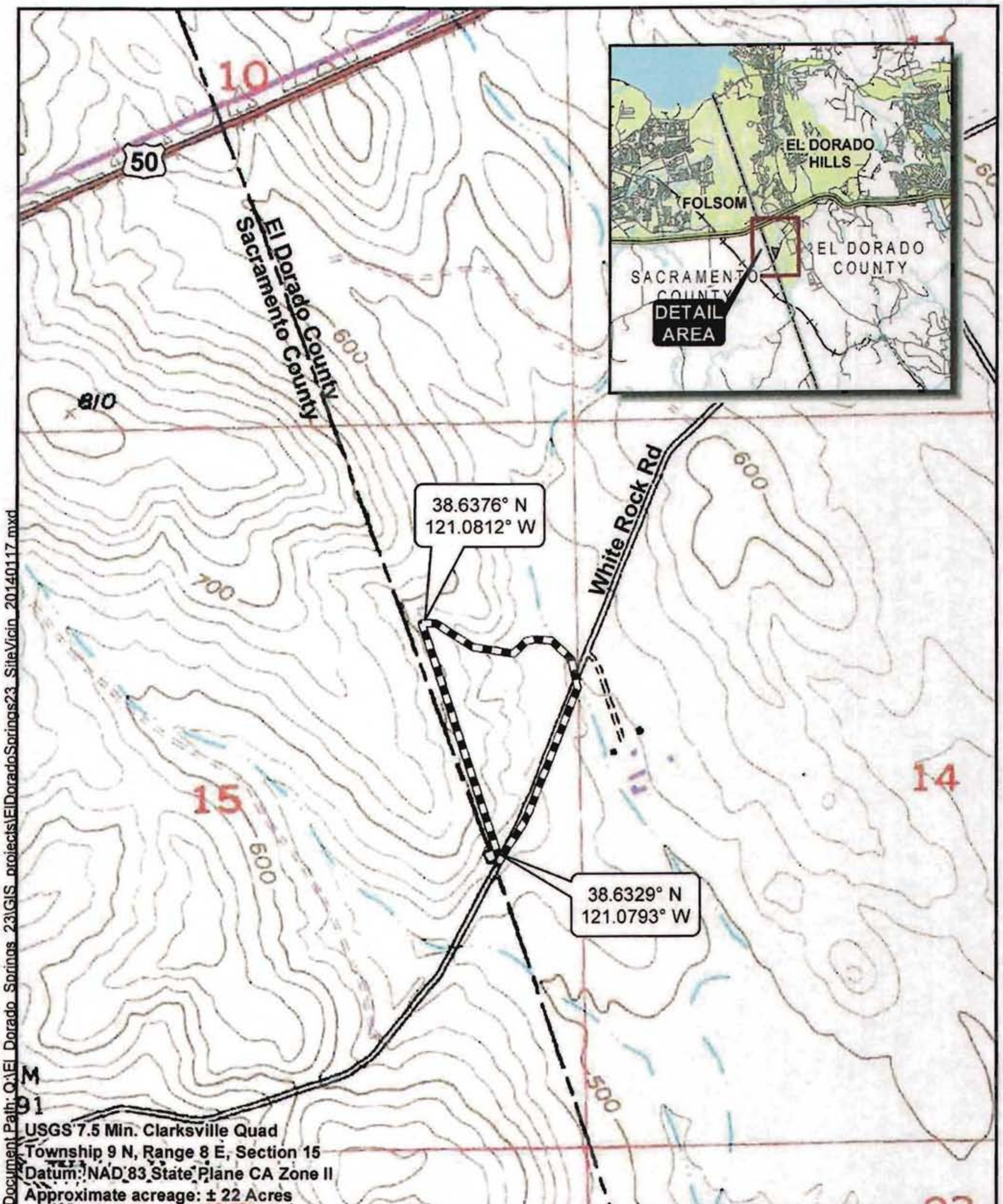

Figure 1. Project vicinity and location map.

FOOTHILL ASSOCIATES ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE © 2014	N	0 470 940 FEET 1 inch = 1,000 feet	Drawn By: MUB Date: 01/17/2014	

EL DORADO SPRINGS 23

Document Name: ElDoradoSprings23_SiteVicin_20140117.mxd : 1/17/2014 3:56:42 PM

Document Path: Q:\El_Dorado_Springs_23\GIS_projects\EDS23_APE_20140604.mxd

Figure 2. Area of Potential Effect

FOOTHILL ASSOCIATES
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© 2014

N

0 125 250
Feet
1 inch = 250 feet

Drawn By: MUB
Date: 06/04/2014

EL DORADO SPRINGS 23

Document Name: EDS23_APE_20140604

- **Resolving Adverse Effects** (the process of negotiating a Memorandum of Agreement between the consulting parties was streamlined in 1999 and now may involve only the federal agency and the State Historic Preservation Officer as signatories. However, the Advisory Council recommends that the federal agency should invite federally-recognized Indian tribes that attach religious and cultural significance to properties off tribal lands to concur with the findings in the MOA).

Under federal regulations, where there is a federal undertaking on non-federal land (*e.g.*, issue of a permit), a consultant may gather information necessary for the federal agency to meet its responsibilities under Section 106, but the agency official remains legally responsible for all required findings and determinations [36 CFR Part 800.2(a)(3)]. In accordance with 36 CFR Part 800.2(c)(ii)(A), (B) and (C), it is the agency official who has the responsibility to make a reasonable and good faith effort to identify Indian tribes that shall be consulted in the Section 106 process. The federal government has a unique legal relationship with Indian tribes set forth in the Constitution of the United States, treaties, statutes and court decisions, and, therefore, consultations must recognize this government-to-government relationship.

PROJECT DESCRIPTION

El Dorado Springs 23 is a proposed residential development located along White Rock Road near the El Dorado-Sacramento county line in El Dorado County, California (see figures 1 and 2, above). The proposed development will consist of 49 single family residential lots on 21.65 acres. The project will be served by public water and sewer from the El Dorado Irrigation District. The water line will connect at the intersection of Carson Crossing Drive and White Rock Road where the hill was cut down during the previous road widening project (White Rock Road Improvements Project). At this location, the hill was cut down 10 feet through the existing road, which means that the old White Rock Road concrete section was removed at that time. The water line to serve the proposed residential development will be installed at this same location where the old concrete section of White Rock Road was taken out. The greatest anticipated depth of excavation for the project as a whole is 18 feet.

THE UNDERTAKING

Since the project would affect waters of the United States, the project proponent must meet requirements of Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act, and therefore, is seeking a permit from the U.S. Army Corps of Engineers, Sacramento District.

AREA OF POTENTIAL EFFECT (APE)

The proposed project is located at the western margin of El Dorado County on the north side of White Rock Road (El Dorado County Assessor's Parcel Number 117-010-05). Situated on the west side of El Dorado Hills, the project site and adjoining White Rock Road make up the approximate 25-acre geographic Area of Potential Effect as determined in consultation with the U.S. Army Corps of Engineers regulatory manager (Peck Ha, personal communication 6/11/2014) (see Figure 2, above). The APE includes the residential development, utility hookups and construction staging. Access to the APE will be along existing roads (for photographs of the vicinity, see Appendix A).

The vertical APE will be the maximum depth of excavation, which is estimated at 18 feet. The locality is underlain by Jurassic Copper Hill volcanics, which include mostly metamorphosed mafic to andesitic pyroclastic rocks. Copper Hill volcanics are known as host rock for foothill copper-zinc deposits. The exposed, relatively thin sediments of the project site are Quaternary alluvium (*cf.* Lloyd 1984:25 and Wagner *et al.* 1981). Therefore, the probability of encountering buried cultural deposits is low.

LITERATURE REVIEW

The literature review includes a historic context statement and records search results from the North Central Information Center, California Historical Resources Information System. Background material is based in part on previous studies found in the gray literature housed by the information center, as well as published secondary sources and land acquisition records housed by the U.S. Department of the Interior, Bureau of Land Management and historic county maps.

Historic Context

Identification, evaluation and treatment of historic properties are most reliable when there is an understanding of the relationship between those properties and other similar cultural resources. Standard I of the Secretary of the Interior's Standards and Guidelines defines the concept of "historic context" as information on aspects of history, architecture, archaeology, engineering and culture that are collected and organized to define those relationships (National Park Service 1983:44717).

Historic contexts are based on cultural themes, their geographic extent and time period. Any particular historic context describes the "significant broad patterns of development in an area that may be represented by historic properties." Prehistory, Nisenan/Miwok ethnohistory, historic transportation, agriculture and mining are the dominant themes for the locality.

Prehistory of El Dorado Hills Vicinity (9,000 B.C. to A.D. 1800)

While the earliest human occupation of Central California is still debated, it can be argued that the close of prehistory coincided with the first evidence of European trade goods appearing in coastal Marin shell middens *circa* 1595 or earlier. However, it was not until two centuries later that Native Americans at the eastern edge of the Sacramento Valley experienced their first direct contact with Europeans, which signaled the end of isolation for these interior non-literate societies.

Since the early 1950s, stone tools of the so-called "Farmington Complex" have been unearthed periodically along the Sacramento Valley-Sierra foothills ecotone (Moratto 1984:62). Archaeologist Eric Ritter has shown that the artifacts are either contemporaneous with, or older than the Modesto Formation, which would date the tools between 10,000 and 5000 B.C. (Ritter *et al.* 1976).

Commenting on the 1979 excavations by Peak & Associates of a stone tool quarry and campsites in the Calero Basin near Rancho Murieta, nine miles south of El Dorado Springs 23, the late Southwestern archeologist Julian Hayden once remarked about the similarity of Farmington artifact types with those of San Dieguito II from southern California and the Lower Colorado River area (Peak 1981; Julian Hayden, personal communication 1994).

San Dieguito II is coeval with the Western Pluvial Lakes Tradition, an adaptation of ancient cultures to lake, marsh and grassland habitats along the eastern side of the Sierra Nevada as early as 9000 B.C. (Moratto 1984:90-91). The development of the Western Pluvial Lakes Tradition and its regional variants such as the Farmington Complex may, as Moratto suggested, correspond to the emergence and initial differentiation of Hokan languages (1984:544).

The Archaic Period, which in California lasted from about 6000 B.C. to A.D. 1000, is divided by archaeologists into three sub-periods: lower, middle and upper (Fredrickson 1994:100, Figure 9.1). During the Lower Archaic, between 6000 and 3000 B.C., many pluvial lakes across the state became dry playas as a result of climatic changes. Early milling stone complexes of this sub-period have been identified by scholars at a number of sites in southern and northern California. Previous finds of milling stones and Pinto-like projectile points at sites in Marble Valley, five miles east of El Dorado Springs 23, could reflect Native American use of the area dating back 4000-7000 years (Windmiller 1996:1; 1997:10; see also Moratto 1984:Figure 4).

The Middle Archaic, dating between 3000 and 500 B.C., marked the beginning of the fluorescence of aboriginal cultures in California's Great Central Valley. Middle Archaic people may have used the lower foothills as a summer resource area (Moratto 1984:206). A study of Hawyer Cave located in the foothills near the American River revealed artifact types common in the Middle Archaic levels of village mounds in the Sacramento Delta region (Wallace and Lathrap 1952).

Bedrock mortars are common along the Sacramento Valley-Sierra foothills edge. Reliance on acorns as a staple is inferred from what is generally recognized as the first appearance of mortars and pestles in archeological sites dating early in the period (Fredrickson 1994:100, Figure 9.1).

Between 4000 and 2000 B.C., it is probable that Hokan languages were spoken in much of California. However, with increased aridity east of the Sierra, speakers of Penutian languages apparently began moving from the deserts of the northwestern Great Basin and southern Columbia Plateau into northern California.

Sedentary villages were established in the western Sierra by the time of Christ, possibly earlier (Moratto 1984:303). In the mid-Sacramento Valley, these developments followed the formation of the Sacramento Delta and marsh lands, which were fully formed by 2000 B.C. Birth of the delta was a consequence of the rising sea level caused by global warming and melting of glaciers at the end of the Pleistocene.

The Windmiller Pattern dates back as early as 2400 B.C. in the Sacramento Valley. Its origins are also tentatively traced to the Altithermal cultures of the northwest Great Basin and southern Columbia Plateau, as archaeologists have speculated that people of the same language group occupied the juncture between the Great Basin and Plateau provinces before 2500 B.C. (Moratto 1984:552).

It is also possible that other Great Basin peoples occupied the area in place of the proto-Yokutsan speaking people of the Windmiller Pattern. The so-called "Martis Complex" with its characteristic dart points made of basalt originally identified by archaeologists at sites in the high Sierra is also represented in the Sierra foothills and may reflect local settlement by an entirely different language group. Such sites may date to the period, 2000 B.C. to A.D. 500 (*cf.* Elston *et al.* 1977). Large, Martis-like projectile points have been discovered at archaeological sites in the lower foothills (*cf.* Wallace and Lathrap 1952 and Archeo-Tec 1991). Finds in Marble Valley included projectile point styles similar to Martis (Windmiller 1996:1). Moratto speculated on a Hokan language association with the Sierra foothills expression of Martis (Moratto 184:562).

Between 2000 and 500 B.C., Utian populations appear to have occupied the Sacramento Delta, the areas along rivers and streams, marsh land, as well as the hills on both the east and west sides of the Sacramento Valley (Moratto 1984:553). Expansion westward into the San Francisco Bay area seems to have brought about some type of fusion between the bearers of Utian languages and the resident speakers of Hokan and Yukian languages. This apparent fusion of cultures, whatever its precise nature, resulted in what archaeologists now recognize as the Berkeley Pattern, sometimes still referred to as the "Middle Horizon."

Ancestors of the Nisenan, a Maiduan people who historically inhabited the American River drainage and who lived for part of their history in the El Dorado

Hills vicinity, migrated to the region rather late in time. Increased aridity in the Great Basin seems to have been an important factor initially that prompted entry of ancestral Maiduans into the northern Sierra Nevada.

During the first 200 years of the Christian era, Maiduan groups penetrated farther west to the Yana territory of northeastern California (Moratto 1984:562). Ritter's Bidwell Complex may represent the radiation of Maiduan speakers into the Oroville locality around A.D. 600-700 (Ritter 1970a, 1970b; Moratto 1984:562).

After comparing various linguistic models of Maiduan radiation, archaeologist Makoto Kowta suggested that Maiduan-speakers entered California from the north around A.D. 500 and settled first in the foothills or valley edge in what historically became Nisenan territory (1988:190).

During the Bidwell phase, population growth in the foothills is evident from the archaeological discoveries. In the Sacramento Valley, such growth is reflected by the occurrence of large village mounds along the Sacramento, Cosumnes and American rivers.

The Emergent Period, A.D. 1000-1800, was characterized by the consolidation of territories formed as a result of the migration of native groups, including the Nisenan. The territories formed during the Emergent probably remained in much the same locations as noted by early Spanish observers (*cf.* Fredrickson 1994:100, Figure 9.1). Interregional trade seems to have expanded greatly during the Emergent, up to the succeeding Mission Period when Spanish intrusions began tearing the fabric of native life in California.

A recent updated synthesis notes little new information in the area due to few new investigations and the inadequacy of older collections in meeting the needs of current research objectives. However, researchers have taken the generally recognized cultural periods and updated the time span of each period based on new radiocarbon determinations adjusted with modern calibration curves (Rosenthal *et al.* 2007:150):

Paleo-Indian (11,550-8550 cal B.C.)
Lower Archaic (8550-5550 cal B.C.)
Middle Archaic (5550-550 cal B.C.)
Upper Archaic (550 cal B.C.-cal A.D. 1100)
Emergent (cal A.D. 1100-Historic)

Ethnography/Ethnohistory of the El Dorado Hills Vicinity (*circa*1800-1890)

El Dorado Springs 23 is located within a boundary zone between traditional Nisenan and Miwok territories. James Bennyhoff's doctoral dissertation, which has become the definitive work on Plains Miwok ethnogeography, indicated a broad boundary area located between Latrobe on the south and Folsom on the north (Bennyhoff 1977:165).

In both Valley Nisenan and Plains Miwok groups, the tribelet, a loose political organization, controlled specific districts usually bounded by the land between drainages (*cf.* Wilson 1995:2-36). Prior to the gold rush, the establishment of Sutter's Fort, and prior to the 1833 epidemic, villages were distributed along the banks and tributaries of major rivers such as the Sacramento, American and Cosumnes (Bennyhoff 1977:34).

Valley Nisenan communities ranged in size from small, extended families of 15 to 25 people to large villages with a population over 500 (Kroeber 1925:831). In the early 1800s, a large group could be found at a single village or a cluster of small camps around a large village. The Valley Nisenan built their villages on low, natural levees along rivers and streams, or on gentle slopes with southern exposure (Wilson and Towne 1978:388). The post-Sutter Nisenan village of *Kadema* (CA-SAC-192) excavated by John S. Clemmer in 1960 was situated on a low knoll along the American River about 17 miles west of El Dorado Springs 23.

The Native American villages varied in size from three to 40 or 50 houses. Living quarters were dome-shaped, 10-15 feet diameter, covered with earth, tule mats or grasses. Brush shelters supported by upright posts were constructed in summer and during seasonal rounds of food-gathering. Specialized structures included the semi-subterranean assembly house located at major villages, the sweat house used for curing and purification and the acorn granary. The women of most villages made mortar holes in exposures of bedrock to pulverize acorns.

According to the published literature, foothill Nisenan villages were located on ridges and large flats along major streams. These village sites were smaller than their valley counterparts. Littlejohn reported on the Nisenan village sites of *Bamon* at Shingle Springs, *Yo hi mu* and *Tu lul* near Shingle Springs, *Po lun kit* on the south side of Clarksville and *Wapumi* at Latrobe (Littlejohn 1928:44-46). In the foothills, it was common for families to live away from the main village. Other sites included seasonal camps, quarries, ceremonial grounds, trading sites, fishing locales, cemeteries, river crossings and battlefields (Wilson and Towne 1978:389).

Archaeological excavations at CA-ELD-451 and CA-ELD-452 located about three miles north of El Dorado Springs 23 revealed the presence of cremations, glass beads and other historic artifacts. The two archaeological sites, possibly the ruins of a pre-Sutter period Nisenan camp and post-Sutter cry site, are situated in a sheltered canyon (Windmiller and Starns 1998).

The 1833 epidemic, probably malaria brought south from Oregon by a party of trappers, decimated an estimated 75 percent of California's native population. By the 1840s, a number of the remaining Nisenan people settled around Sutter's Fort and worked for Sutter until the gold rush. Others pressed into traditional Miwok territory (Wilson 1995:2.46).

Louis A. Payen described a Nisenan group from Carson Creek (CA-ELD-80/H?) that moved five miles southwest of Clarksville to Walltown under pressure from miners on Carson Creek during the early part of the gold rush (Payen 1961:6). Payen indicated that the Walltown Nisenan group attended a "Big Time" (dances and ceremonies) at *Po lun kit* (CA-ELD-918/H and field no. V-45?), thereby retaining their connections with the Clarksville area. In the 1870s, however, Walltown residents apparently forced the native people to move again. This time, the move was to *Palmul* at Michigan Bar on the Cosumnes River (Payen 1961:18).

Based on Bennyhoff's exhaustive study and other sources mentioned above, the historical record illustrates a progressive movement of Nisenan southward, a movement that began during the Sutter period and was probably accelerated by the gold rush.

Prior to 1843, it is likely that Valley Nisenan held the territory along the American River and Plains Miwok ". . . held the entire valley drainage of the Cosumnes River from its juncture with the Mokelumne River to about the 500 foot contour in the foothills." The area between the two drainages may have been used by both groups and possibly also by Hill Nisenan people (Bennyhoff 1977:94).

History of the El Dorado Hills Vicinity (1848-1960)

Following the initial discovery of gold at Sutter's Mill, Coloma, in January, 1848, two members of the disbanded Mormon Battalion found gold on the South Fork of the American River about a mile above its confluence with the North Fork. The March, 1848 discovery at "Mormon Island" actually started the gold rush (Castenada *et al.* 1984:31).

The discoveries spurred thousands of immigrants to California. By May, 1848, there were only a few hundred working at shallow placer mines. By the end of 1848, there were 8,000-10,000. During the following year, 1849, almost 40,000 followed routes by land and sea to the gold fields. The migration of 1850 was just as great (Caughey 1953:245,247,252).

The early mining focused on the river placers. Deposits of gravel along the river meanders were an initial attraction. Mining camps arose at these river "bars." Early placer mining expanded from Coloma to Webber Creek and then to the rich creek gravels in the vicinity of present-day Placerville. Fueled by discoveries at Coloma, Placerville and Folsom, nearly every ravine in the region was mined (Lindstrom 1998:13).

The route of present-day White Rock Road, which is included in the El Dorado Springs 23 APE, was the approximate route of the old freight wagon road between

Sacramento and Placerville. The road was first known as the Hangtown Cut-Off, then later, the Mills-Hangtown Road, Placerville Road and the Mills-White Rock Road (Wilson 1986:1, 4).

In the early 1900s, White Rock Road was designated "State Route 11." The road was re-graded and realigned between 1910 and 1920. It was later designated as part of the transcontinental Lincoln Highway (Windmiller 2001:9).

An early inn on the west side of White Rock Hill from El Dorado Springs 23was the White Rock Springs Hotel. The "hotel" was originally a large canvas tent used as both dining and sleeping quarters for the teamsters who plied the freighting road. In April, 1850, Daniel H.C. Chapman purchased the property and then built a large barn and hotel. White Rock Springs soon became a favorite stopping place (Wilson 1986:5).

There was enormous freight traffic from Sacramento to Placerville in the early 1850s. It was about three days' drive for a freight wagon. And so, a chain of overnight inns were constructed along the route. Most of the inns were similar to one another. The main buildings were a large barn and a building that included a dining hall and sleeping quarters. In addition, several inns had large wine cellars or spring houses, partly subterranean and walled with native rock (Wilson 1986:2-3).

Coming from Sacramento and heading towards Clarksville, White Rock Road ascended White Rock Hill, crossed its summit, then descended quickly to a nearly level area at the foot of a long ravine west of the El Dorado Springs 23 APE. On the north side of the road at this place was the Brooks Hotel. During the height of the freighting era, Reuben Brooks built and operated the hotel. South of the hotel on the south side of White Rock Road, Brooks co-owned a lode mine claim (Brooks Quartz Claim) established in the early 1850s. A mill operated at the mine for several years. Later, the claim was known as the "Jersey Blue Mine" due to the color of the local quartz. Local avocational historian, John Wilson reported that small scale mining continued at the location until the turn of the century. Wilson also related that John York and George Wilkinson worked the claim for many years (Wilson 1986:5).

Changes to the transportation corridors spelled the end of the numerous inns. The Comstock boom of the 1860s temporarily boosted the region's economy. However, completion of the Sacramento Valley Railroad first to Latrobe, then to Shingle Springs, bypassed the inns between Sacramento and Clarksville. With less need for the inns, and less demand for quantities of supplies, the local market for farmers and ranchers also declined. A concomitant rise in crime from cattle rustling, larceny to assault further marked the economic decline in this agriculturally-marginal area (Windmiller and Osanna 1999:15).

Wilson noted that many of the former inns such as the Brooks Hotel fell into disuse, were abandoned and eventually decayed into ruins. However, a few, such as the

White Rock Springs Hotel, were converted to ranches and the locality became the focus of stock raising (Wilson 1986:7).

By the 1860s, most of the region was dry farmed and winter grazed by sheep or cattle. The hills were rocky and clearing fields was necessary to allow the grass to grow and to relieve difficulty in mowing. In places where rock outcropped naturally, the ranchers would use the rock to build fences at those locations. Ranchers would extend brush fences or, later, barbed wire from the rock walls to create acreage. The fences functioned as field divisions, section lines and corrals.

Sheep were introduced to the semi-arid foothills in the 1850s. The peak of sheep raising was probably reached by the 1860s and 1870s. The California Trespass Act of 1850 required farmers to fence their crops to keep out grazing animals. By the late 1860s, however, the burden of fencing was placed on the ranchers who kept livestock. Many of the rock fences found in the region may date to this period and later.

During the gold rush and before the railroads, agriculture in western El Dorado County depended mainly on the home demand, which was regulated by the mining industry. After the gold rush, land ownership in the locality was dominated by few families.

The period, 1870-1960 was characterized by a consolidation of land holdings and the transhumance or seasonal movement of livestock to greener pastures in the Sierra. By the early 1870s, it was virtually impossible to earn a living from the smaller parcels of land that once dotted the countryside. The early mixed economy of mining, ranching and other activities was replaced by the focused strategy of large-scale cattle and sheep ranching.

One of the area's largest landowners was Joseph Joerger. By the late1800s, early 1900s, Joerger's holdings took in the El Dorado Springs 23 APE and other properties on both sides of the county line. Neighboring ranchers included the Euer, Cothrin and Kyburz families (Punnett Brothers 1895; Phinny, Cate and Marshall 1913). By the mid-1920s, the land was still in the Joerger family (Wildman 1925).

Records Search Results

On June 19, 2014, the North Central Information Center, California Historical Resources Information System completed a records search of the APE and a one-quarter mile radius around the APE. Information center staff noted previously documented cultural resources within the quarter mile radius and one (P-9-809/CA-ELD-721H) located within the APE.

Site P-9-809/CA-ELD-721H is the old Lincoln Highway in El Dorado County. The portion of the old concrete road located in the APE is paved over with asphalt.

Determinations of eligibility for other segments of the old concrete roadway have varied from ineligible for the National Register to eligible for the National Register. According to information center staff, this particular short segment of the road has not been previously documented on DPR 523 series record forms, nor, apparently has it been evaluated for the National Register of Historic Places as information center staff reported nothing listed on the California Office of Historic Preservation's Historic Properties Directory, nor on the California Inventory of Historic Resources, Caltrans Bridge Survey or local inventories.

Locally, where the old Lincoln Highway's concrete roadway is exposed, the road has been determined ineligible for the National Register (see Archaeological Determinations of Eligibility in Appendix B: Records Search Results) and eligible for the National Register [see the determinations of eligibility for three segments of the road in the Clarksville vicinity in the Memorandum of Agreement for the Silva Valley Parkway Interchange (U.S. Army Corps of Engineers *et al.* 2013)].

The information center reported that four previous studies have either encompassed the El Dorado Springs 23 APE or touched a small portion of the APE, while an additional eight previous studies were conducted within a quarter mile of the APE. In 2006, Sean Michael Jensen completed an archaeological survey of the subject property, though the APE of the time did not include White Rock Road. Jensen reported that he did not find any cultural resources (Jensen 2006).

A portion of the General Land Office Plat including the project APE was provided by the information center. The plat illustrates the Placerville Road in approximately the same location as the present White Rock Road. No other man-made features are illustrated in the immediate vicinity of the APE.

The 1887-1888 Sacramento Sheet is much smaller scale than the GLO plat. However, White Rock Road is illustrated on the map, though no other man-made features are illustrated in the immediate vicinity.

The 1953 USGS 7.5 minute Clarksville quadrangle also illustrates White Rock Road, but no other man-made features within the APE (for the complete report, see Appendix B: Records Search Results).

NATIVE AMERICAN COORDINATION

On June 18, 2014, the Native American Heritage Commission completed a search of its sacred lands file for the El Dorado Springs 23 project. In the commission's letter report, staff indicated that the file search failed to indicate the presence of Native American cultural resources in the immediate project vicinity. Staff enclosed a list of Native American individuals and organization that may have knowledge of cultural resources in the area.

- Mr. Hermo Olanio, Vice Chairperson, Shingle Springs Band of Miwok Indians
- Mr. Gene Whitehouse, Chairperson, United Auburn Indian Community of the Auburn Rancheria
- Ms. Eileen Moon, Chairperson, T'Si-Akim Maidu
- Mr. Nicholas Fonseca, Chairperson, Shingle Springs Band of Miwok Indians
- Mr. Grayson Coney, Cultural Director, T'si-Akim Maidu
- Mr. Marcos Guerrero, Tribal Preservation Committee, United Auburn Indian Community of the Auburn Rancheria
- Ms. April Wallace Moore
- Mr. Daniel Fonseca, Cultural Resource Director, Shingle Springs Band of Miwok Indians
- Ms. Judith Marks, Colfax-Todds Valley Consolidated Tribe
- Ms. Pamel Cubbler, Colfax-Todds Valley Consolidated Tribe
- Mr. Jason Camp, THPO, United Auburn Indian Community of the Auburn Rancheria
- Mr. Don Ryberg, Chairperson, T'si-Akim Maidu

The above individuals were contacted by US mail in a letter dated June 26, 2014. The letter indicated that the Native American Heritage Commission recommended contacting each individual for information he or she may have regarding specific knowledge of cultural resources. The letter included a brief description of the proposed project and included a location map. No response was received as a result of the letters.

On July 15, 2014, we attempted to contact each by telephone. Our letter to Mr. Hermo Olanio, Vice Chairperson, Shingle Springs Band of Miwok Indians was forwarded to Mr. Daniel Fonseca, Cultural Resource Director of the Band. Mr. Fonseca could not be reached by telephone for comment. However, we left a detailed message in Mr. Fonseca's voicemail. We also attempted to reach Mr. Nicholas Fonseca, Ms. Eileen Moon, Mr. Gene Whitehouse, Mr. Marcos Guerrero, Ms. Judith Marks, Mr. Jason Camp and Mr. Don Ryberg. However, we were unsuccessful and instead, left a detailed voicemail for each. No responses have been received to date.

However, Ms. April Moore, Ms. Pamela Cubbler and Mr. Grayson Coney did respond by telephone. Also, Ms. Kathy Frank responded for Mr. Daniel Fonseca. Ms. Moore expressed her concern for historic and prehistoric sites along White Rock Road. Ms. Cubbler expressed concern that a Native American Monitor should be retained for the construction phase. Mr. Coney indicated that the project was too far south for his tribal involvement and suggested that local native people should be contacted. Ms. Frank called back for clarification as to when the original Native American letter had been mailed. The sub-consultant responded with the date of the letter. For a complete record of Native American contacts, see Appendix C: Native American Coordination.

FIELD METHODS

In July, 2006, El Dorado Springs 23 was inspected on foot by Sean Michael Jensen and Robert McCann, Genesis Society. Jensen reported that the field team walked the property along transects 15-20 meters apart. The field team was alert for unusual contours, soil changes, distinctive vegetation patterns, exotic materials, artifacts, feature or feature remnants and other indicators. Two person days were expended on the field inspection (Jensen 2006:6).

Disturbance to the ground surface appeared minimal. Barbed wire fencing generally surrounded the subject property. Disturbances were noted along the property's east boundary due to improvements on White Rock Road. Overhead and buried utilities were noted within/adjacent to the subject property (Jensen 2006:7).

On July 5, 2014, we conducted an inspection of the current El Dorado Springs 23 APE, which included the White Rock Road right of way. The White Rock Road area had not been included in the Jensen study. Therefore, the unpaved portion of the right of way was inspected along the equivalent of 15 meter transects. The remainder of the APE, previously inspected by Jensen, was walked along widely spaced transects with particular attention to rock outcrops. Field conditions appear to have been much the same as experienced by the Jensen team, as both inspections were conducted at the same time of year: mid-summer.

The field team was led by Ric Windmiller, R.P.A. Windmiller has more than 40 years experience directing archaeological surveys and excavations ranging from the Canadian eastern arctic to northwest Mexico. His experience in northern California includes excavations and field surveys in 36 counties north of the Tehachapis including El Dorado County. He received a Bachelor's degree in anthropology from California State University, Sacramento, Master's degree in anthropology from the University of Manitoba, Canada and all but dissertation for a doctorate in anthropology at the University of Colorado. The Windmiller ancestors partnered with the Joergers in livestock operations back in the late 1800s. Back in 1857, the Windmiller family founded Living Spring Ranch several miles to the west. Ric Windmiller is understandably familiar with the project site and surrounding countryside.

Assisting in the field inspection were Cathryn Chatterton with 10 seasons field experience and Richard Laumann with two seasons experience. 15 person hours were devoted to the field inspection.

DESCRIPTION OF CULTURAL RESOURCES

Two cultural resources were identified within the APE: an isolated bedrock milling station and a 1772 foot long segment of White Rock Road. No traditional cultural properties were identified either as a result of the sub-consultant's general knowledge of local ethnographic accounts, consultation with the Native American Heritage Commission or during current contacts with Native Americans listed by the commission for this specific study.

Field No. EDS-1 (Bedrock Milling Station)

This minor archaeological resource is an isolated bedrock mortar on an outcrop of greenstone. The site is located 53 m west of a narrow, spring-fed drainage. The east-facing hill on which the site is located is a moderate slope. The outcrop measures 3.62m long, 3.18m wide and 1.20 m high. The single mortar hole is in a natural basin on the southwest portion of the outcrop. The mortar hole was filled with sediment, which is probably the reason why it was overlooked during the previous Jensen study. The shallow, conical shaped mortar hole measures 15cm diameter across the top, 4cm diameter across the bottom and 6cm deep. Shovel tests and surface scrapes were taken around the outcrop; no midden or other evidence of a cultural deposit was identified. Soil at this location is very shallow overlying decomposing greenstone.

P-9-809/CA-ELD-721H (White Rock Road, Stonebriar/4-Seasons Segment)

According to the information center's documentation, the segment of White Rock Road located within the APE, from its intersection with Stonebriar and 4-Seasons drives to a point 1,772 feet west near the El Dorado-Sacramento County line has not been documented on DPR 523 series forms. Elsewhere, White Rock Road has been recorded as P-9-809 (CA-ELD-721H). A 1997 DPR 523 series record by Eleanor and Richard Derr, Cultural Resources Unlimited, described the road segment from a point east of the current APE, eastward through Clarksville as a concrete two-lane roadway widened on each side with asphalt to accommodate modern traffic. Shoulders were gravel. Since the Derr record was completed, the road segment from Silva Valley Parkway on the west side of Clarksville to the El Dorado-Sacramento County line was entirely paved over with asphalt. The previous White Rock Road Improvements Project cut back a hill within the current APE removing 10 feet below the old concrete road, which therefore removed a portion of the old roadway prior to paving with asphalt.

DETERMINATION OF ELIGIBILITY

Generally, a historic site, object, building, structure or district is eligible for listing on the National Register of Historic Places if it is 50 years old or older, possesses integrity of location, design, setting, materials, workmanship, feeling and association, and meets at least one of the following criteria (National Park Service 1991):

A. Association with events that have made significant contributions to the broad patterns of United States history.

B. Association with the lives of people important in United States history.

C. Embodies the distinctive characteristics of a type, period, or method of construction; or represents the work of a master, or possesses high artistic value, or represents a significant and distinguishable entity whose components may lack individual distinction;

D. Has yielded or is likely to yield information important in prehistory or history.

National Register eligibility is equally dependent on the condition or integrity of the cultural resource. Integrity, in this sense, is the authenticity of the cultural resource's historic identity, meaning the survival of those physical characteristics that existed during the historic or prehistoric period from which it dates. The integrity of archaeological resources is generally based on the degree to which the remaining cultural deposit, artifacts or features can provide information important to our understanding of history or prehistory.

As a composite of seven qualities, some of which are more germane than others, integrity depends on the type of cultural resource under evaluation and the criterion of National Register eligibility for which the evaluation is made National Park Service 1991:4).

Field No. EDS-1 (Bedrock Milling Station)

This minor archaeological resource is an isolated bedrock mortar on an outcrop of greenstone. The mortar hole was filled with sediment, which is probably the reason why it was overlooked during the previous Jensen study. No evidence of cultural deposits was found associated with the bedrock mortar.

Under National Register Criterion A, the site would have to be associated with one or more events important in the defined historic context. However, lacking a means of dating the site or associating it with any known archaeological complex, this particular site would not be eligible under Criterion A, as any associations would be speculative.

Under Criterion B, the bedrock mortar would have to be associated with individual(s) whose specific contributions to history can be identified and documented. No such association could be identified.

Under Criterion C, the bedrock mortar would need to illustrate a pattern of features common to a certain class of bedrock mortars and it must be an important example within its context. However, no case could be made for significance as an important example of its type under Criterion C. Also, as isolated bedrock mortars along the foothills do not appear to reflect any one time period, this particular bedrock mortar does not appear eligible under Criterion C.

Eligibility under Criterion D for the potential to yield important information would require that the isolated mortar satisfy a need in testing a hypothesis about events, groups or processes that bear on important research questions, corroborate currently available information that a hypothesis is either true or false, or reconstruct a cultural sequence to identify and explain aspects of the archaeological record for a particular area. It is the consultant's opinion that none of the above apply. Therefore, it is our opinion that the site is not eligible for the National Register under any of the above criteria.

P-9-809/CA-ELD-721H (White Rock Road, Stonebriar/4-Seasons Segment)

According to the information center's documentation, the segment of White Rock Road located within the APE, from its intersection with Stonebriar and 4-Seasons drives to a point 1,772 feet west near the El Dorado-Sacramento County line has not been documented on DPR 523 series forms. Elsewhere, White Rock Road has been recorded as P-9-809 (CA-ELD-721H). A 1997 DPR 523 record by Eleanor and Richard Derr, Cultural Resources Unlimited, described a neighboring segment of the road as a concrete two-lane roadway widened on each side with asphalt to accommodate modern traffic. Shoulders were gravel.

Since the Derr record was completed, the segment recorded by the Derrs and the segment located within the present APE were paved over with asphalt. However, three segments of the old concrete road in and around Clarksville were not paved over. Subsequent paving from the west end of the unaltered concrete road at Clarksville to the El Dorado-Sacramento county line has removed all visible traces of the old road, although the concrete roadway in most instances is merely capped with asphalt and therefore preserved.

The cutting down of a hill in the Carson Crossing Drive-White Rock Road intersection within the present El Dorado Springs 23 APE included removal of a section of the old concrete roadway according to the project's consulting engineer (Larry Ito, personal communication 7-18-2014).

The three segments of the old concrete road in the Clarksville locality have been determined eligible for the National Register under Criterion A (*e.g.*, U.S. Army Corps of Engineers *et al.* 2013). A portion of the old concrete road elsewhere has been determined not eligible for the National Register (see Archaeological Determinations of Eligibility, Appendix B). Although the Stonebriar/4-Seasons segment of the concrete roadway is capped with asphalt and no portion of the old roadway within the APE is exposed, it can be assumed that the old concrete road, where it still exists, retains its eligibility under Criterion A.

DETERMINATION OF EFFECT

For purposes of the Section 106 consultation, "effect" is defined as "alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register" [36 CFR Part 800.16(I)].

The proposed undertaking has the potential to alter or destroy the isolated bedrock mortar station, Field No. EDS-1. However, as this minor archaeological resource is not eligible for the National Register under any criterion of eligibility, there will be no effect.

The water line connection for the proposed project will include trenching through White Rock Road at Carson Crossing Drive within the APE. This is the location, according to the project's consulting engineer, where a previous project, the White Rock Road Improvements Project, cut down a hill and removed a section of the old concrete White Rock Road, also known as the Lincoln Highway (P-9-809/CA-ELD-721H). As installation of the water line connection to a public source will occur in the area where the old road has been removed, it is our opinion that there will be no adverse effect.

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APPENDIX A: PHOTOGRAPHS

Figure 3. Looking northwest along the north APE boundary towards existing residential neighborhood.

Figure 4. Looking southwest across APE towards White Rock Road and existing residential neighborhood.

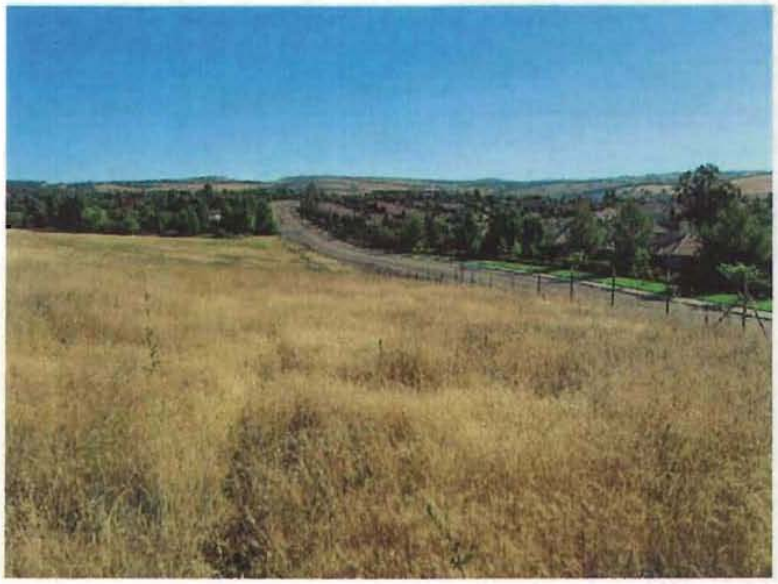


Figure 5. Looking northeast across APE towards White Rock Road-Greenbriar/ 4-Season drives intersection and existing residential neighborhoods.

Figure 6. Looking southwest along White Rock Road from Greenbriar/ 4-Season drives-White Rock Road intersection across southeast side of APE towards White Rock Hill.

APPENDIX B: RECORDS SEARCH RESULTS

This appendix contains information on the specific locations of archaeological resources. This information is not for publication or release to the general public. It is for planning, management and research purposes only. Information on the locations of prehistoric and historic sites are exempted from the California Freedom of Information Act, as specified in Government Code §6254.10.

California Historical Resources Information System

NORTH CENTRAL INFORMATION CENTER

AMADOR
EL DORADO
NEVADA
PLACER
SACRAMENTO
YUBA

California State University, Sacramento
6000 J Street, Folsom Hall, Suite 2042
Sacramento, California 95819-6100
phone: (916) 278-6217
fax: (916) 278-5162
email: ncic@csus.edu

6/19/2014

NCIC File No.: **ELD-14-46**

Ric Windmiller
Ric Windmiller, Consulting Archaeologist
2280 Grass Valley Hwy. #205
Auburn, CA 95603

Re: **El Dorado Springs 23**

The North Central Information Center received your record search request for the project area referenced above, located on the Clarksville USGS 7.5' quadrangle. The following reflects the results of the records search for the project area and a one quarter mile radius:

As indicated on the data request form, the locations of resources and reports are provided in the following format: ☒ custom GIS maps ☐ shapefiles

Resources within project area:	P-09-000809 (CA-ELD-721H)
Resources within .25 mile radius:	P-09-001687 (CA-ELD-1273H) P-09-001691 P-34-001370 (CA-SAC-840H) P-34-001481 (CA-SAC-904H) P-34-001555 P-34-002154 P-34-002166 (CA-SAC-1100H) P-34-002167 (CA-SAC-1101H) P-34-002181 (CA-SAC-1104) P-34-004323 P-34-004480 P-34-004591 P-34-004593 P-34-004665 P-34-004668
Reports within project area:	505 3767 6997 7769
Reports within .25 mile radius:	2588 6625 7267 8963 9364 9390 9683 11395

Resource Database Printout (list): ☐ enclosed ☒ not requested ☐ nothing listed

Resource Database Printout (details): ☒ enclosed ☐ not requested ☐ nothing listed

Resource Digital Database Records: ☐ enclosed ☒ not requested ☐ nothing listed

Report Database Printout (list): ☐ enclosed ☒ not requested ☐ nothing listed

Report Database Printout (details):	☒ enclosed	☐ not requested	☐ nothing listed
Report Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Resource Record Copies:	☒ enclosed	☐ not requested	☐ nothing listed
Report Copies:	☒ enclosed	☐ not requested	☐ nothing listed
OHP Historic Properties Directory:	☐ enclosed	☐ not requested	☒ nothing listed
Archaeological Determinations of Eligibility:	☒ enclosed	☐ not requested	☐ nothing listed
CA Inventory of Historic Resources (1976):	☐ enclosed	☐ not requested	☒ nothing listed
Caltrans Bridge Survey:	☐ enclosed	☐ not requested	☒ nothing listed
Ethnographic Information:	☐ enclosed	☒ not requested	☐ nothing listed
Historical Literature:	☐ enclosed	☒ not requested	☐ nothing listed
Historical Maps:	☒ enclosed	☐ not requested	☐ nothing listed
Local Inventories:	☐ enclosed	☐ not requested	☒ nothing listed
GLO and/or Rancho Plat Maps:	☒ enclosed	☐ not requested	☐ nothing listed
Shipwreck Inventory:	☐ enclosed	☒ not requested	☐ nothing listed
Soil Survey Maps:	☐ enclosed	☒ not requested	☐ nothing listed

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

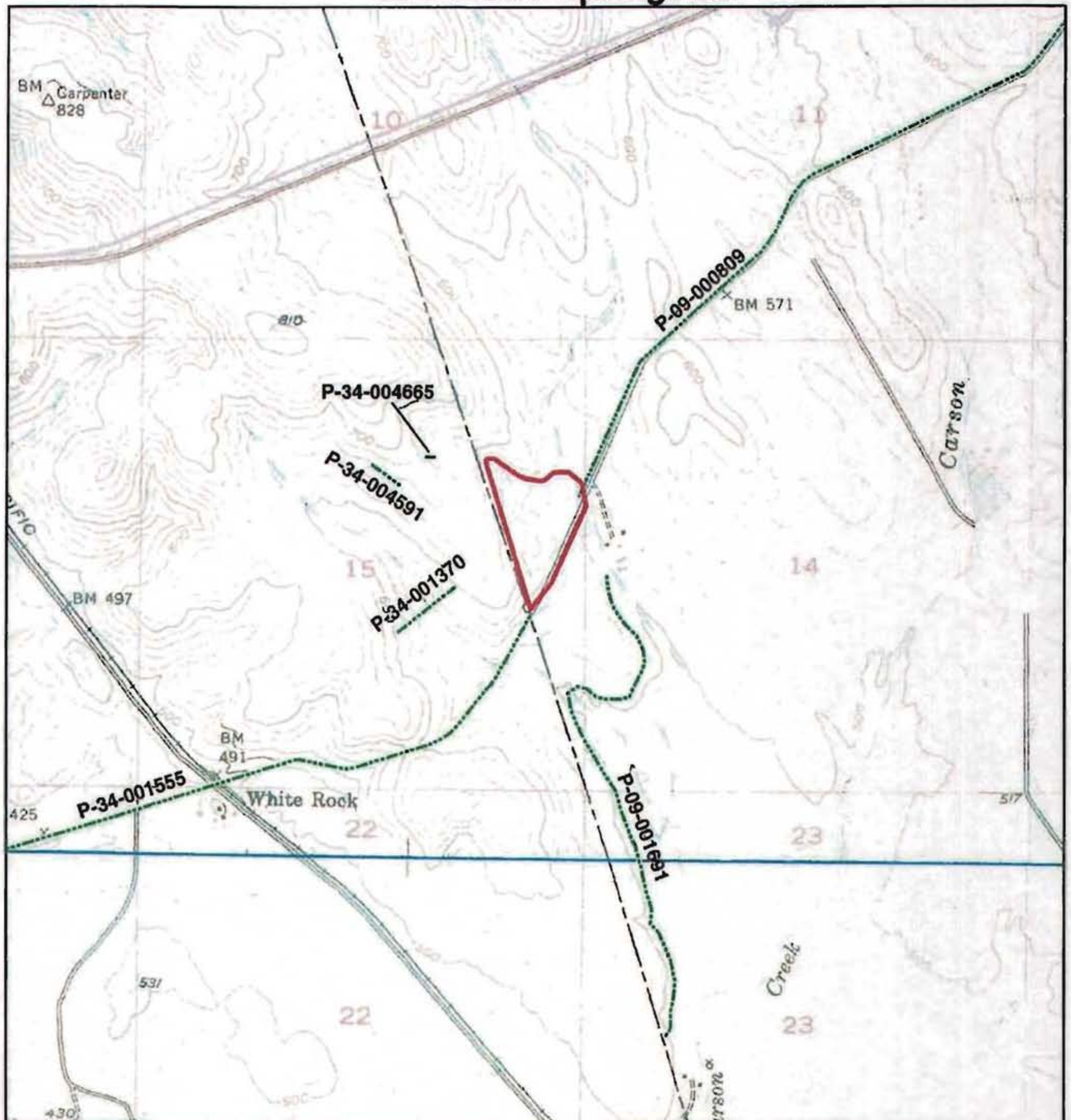
The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Sincerely,

Machiel Van Dordrecht
Researcher

El Dorado Springs 23



Northeast Information Center
Records Search Results

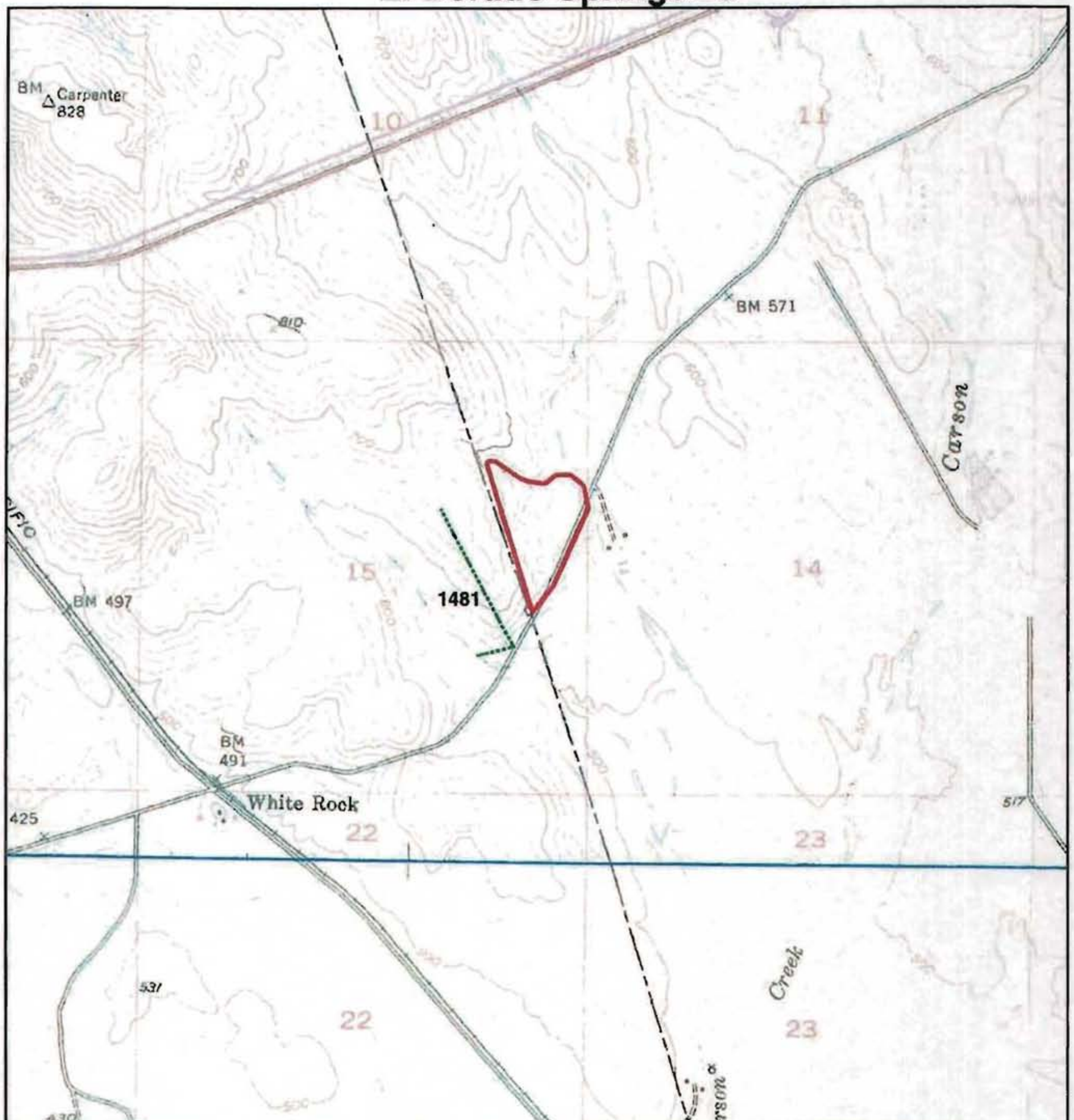
Clarksville 7.5' Quadrangle

6 Resources

0 310 620
Meters

May depict confidential cultural resource locations.
Do not distribute.

El Dorado Springs 23



Northeast Information Center
Records Search Results

Clarksville 7.5' Quadrangle

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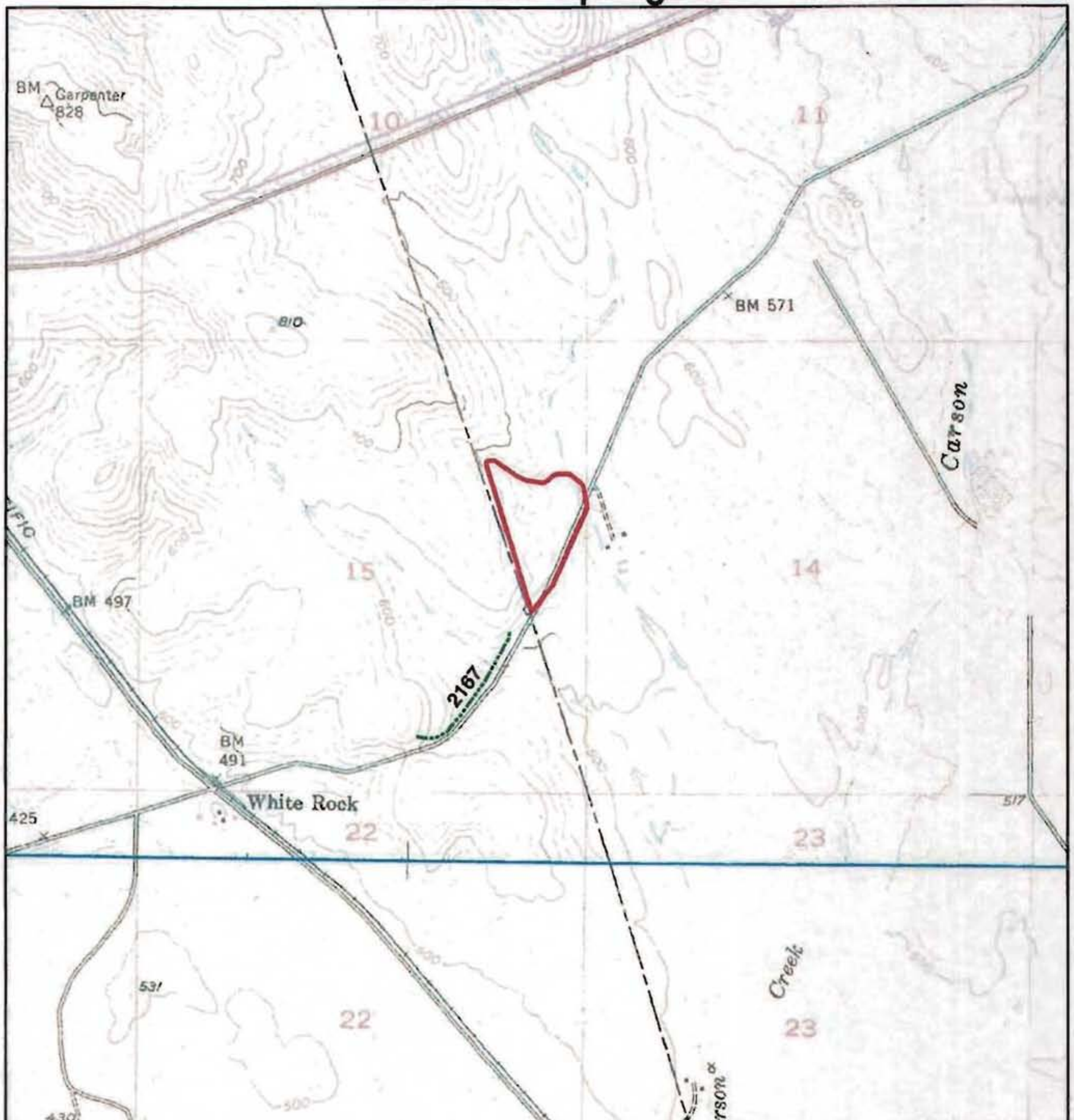
El Dorado Springs 23



Northeast Information Center
Records Search Results

Clarksville 7.5' Quadrangle

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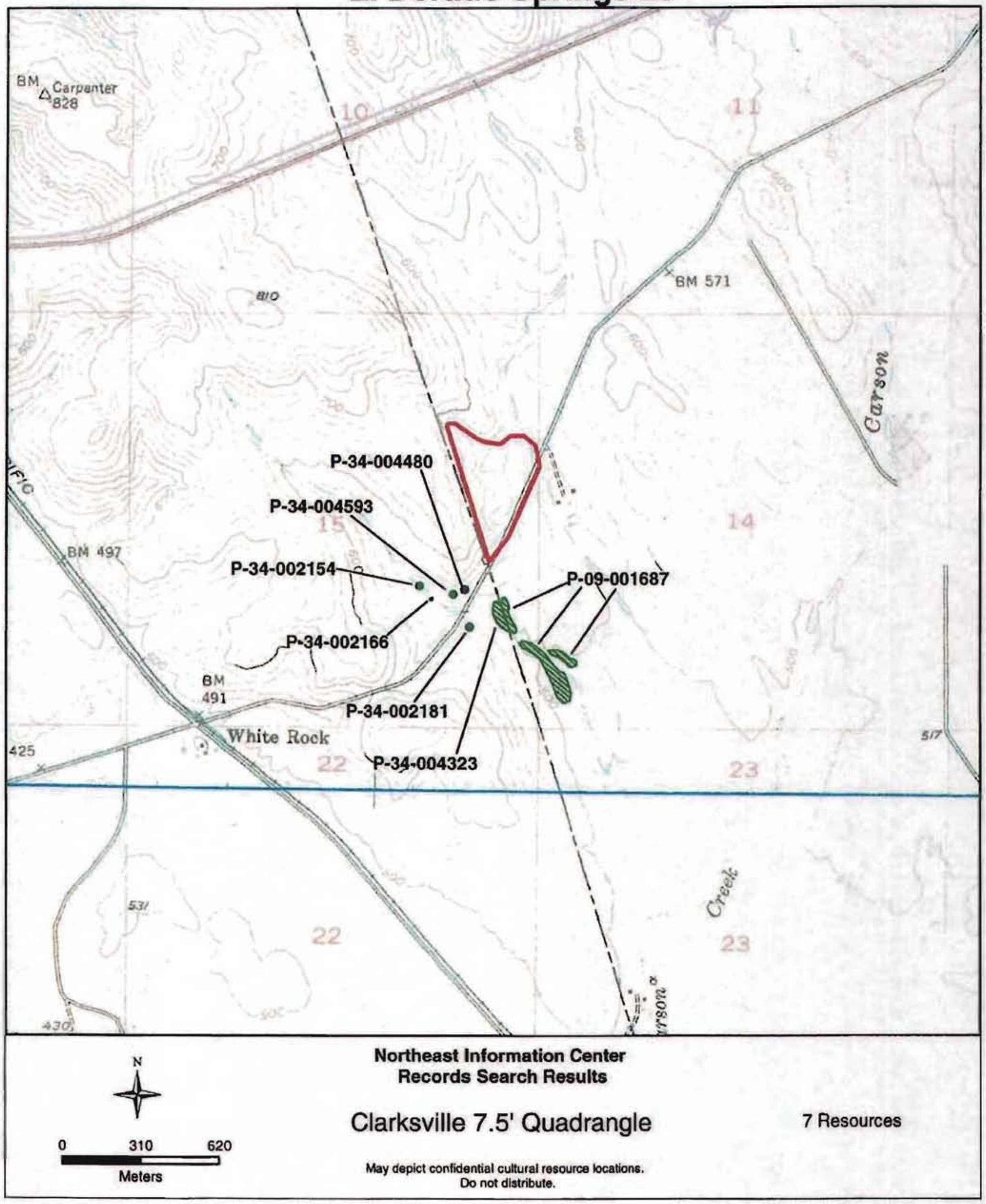

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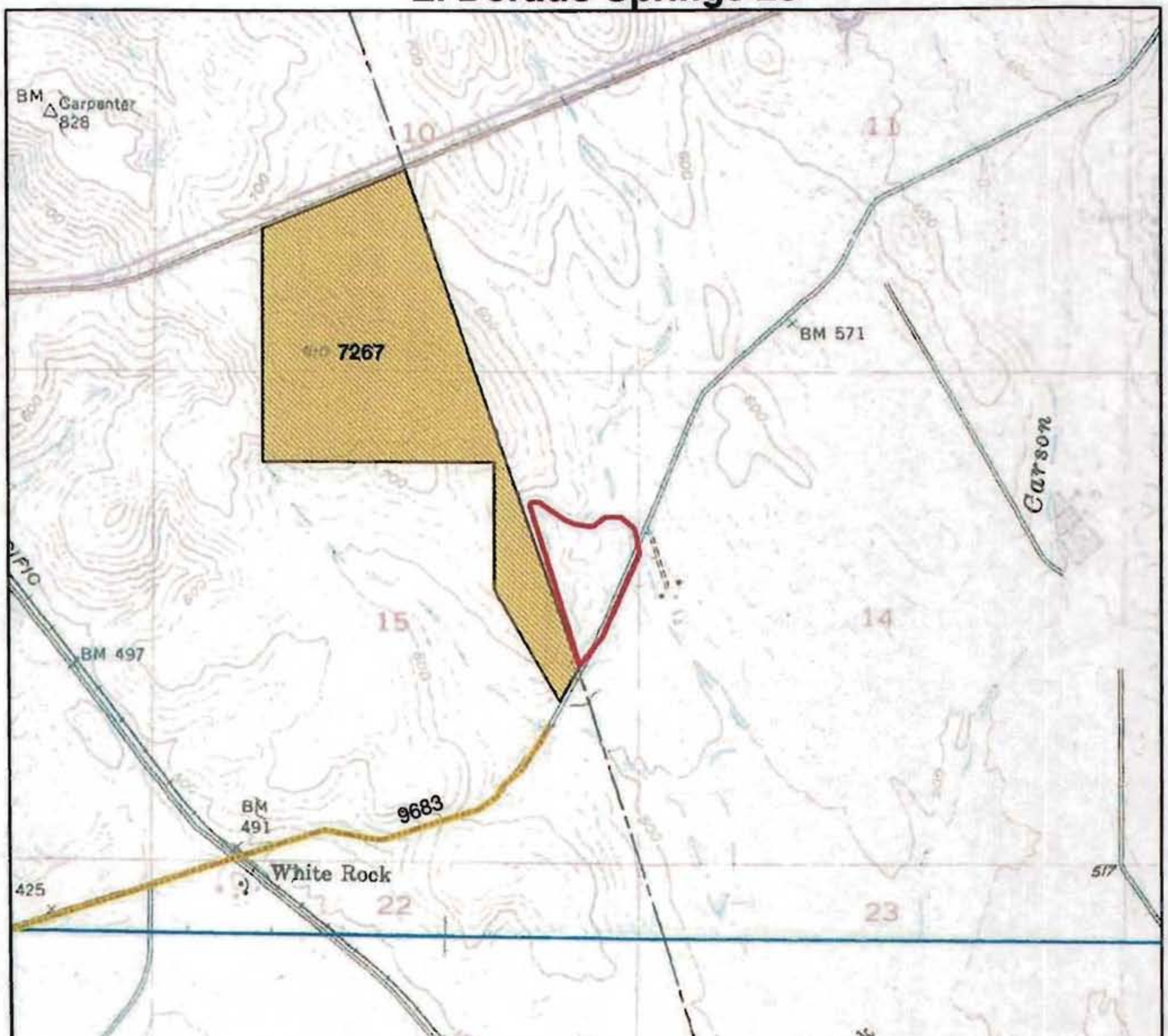

Northeast Information Center
Records Search Results

Clarksville 7.5' Quadrangle

2 Reports

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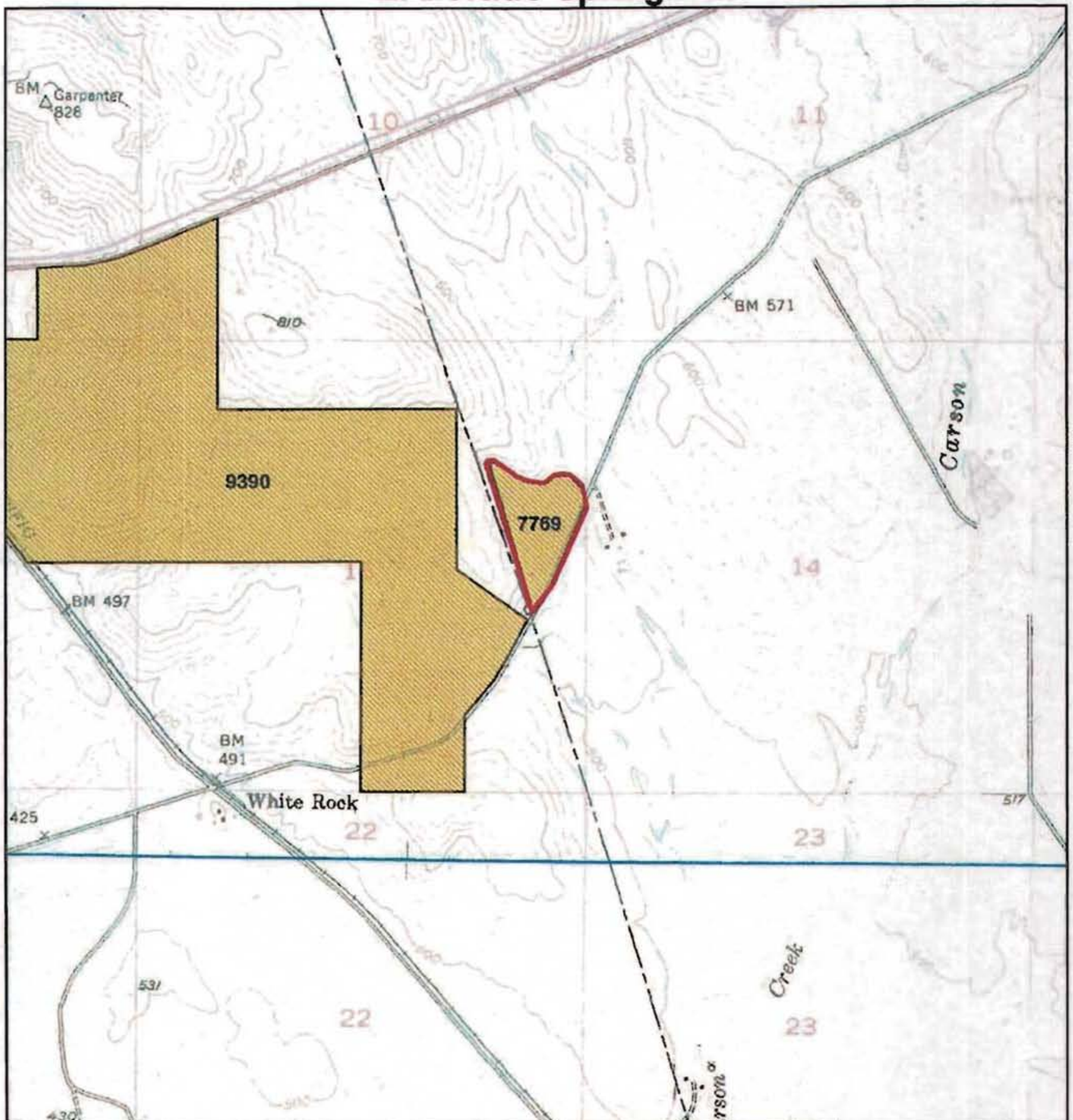
May depict confidential cultural resource locations.
Do not distribute.

El Dorado Springs 23



Northeast Information Center
Records Search Results

Clarksville 7.5' Quadrangle

2 Reports

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May depict confidential cultural resource locations.
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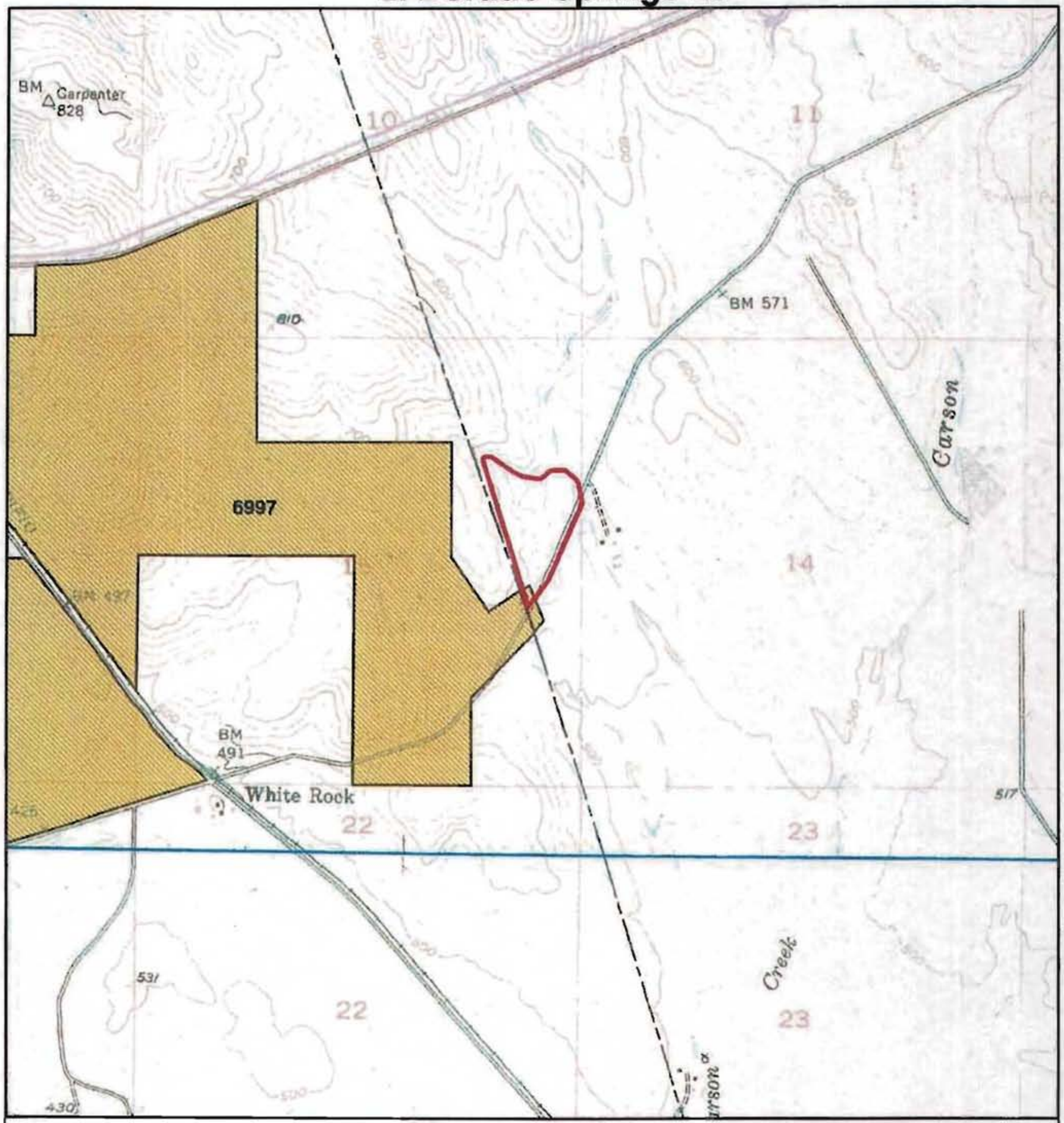
El Dorado Springs 23



Northeast Information Center
Records Search Results

Clarksville 7.5' Quadrangle

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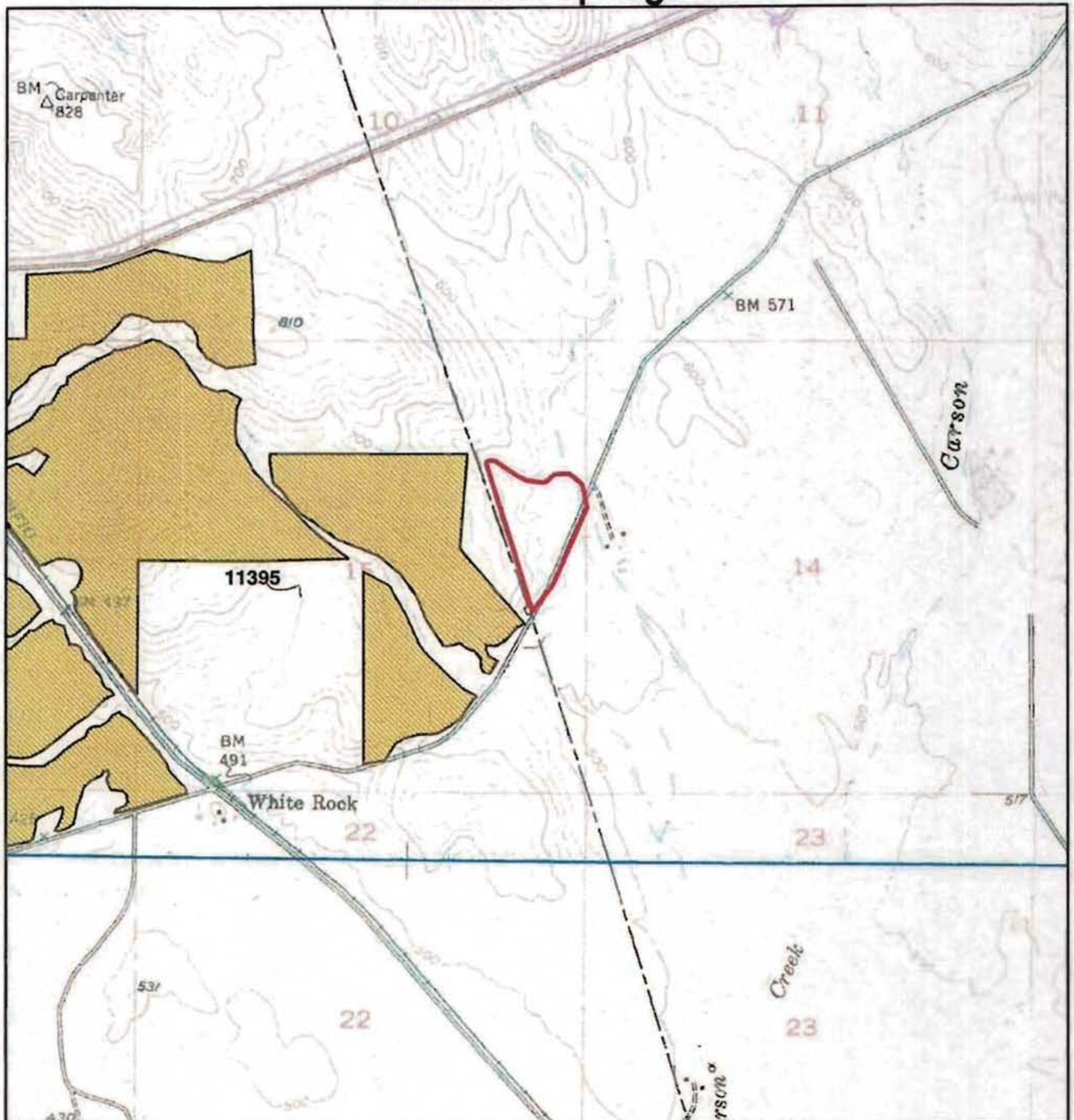

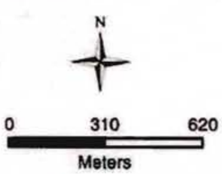

Northeast Information Center
Records Search Results

Clarksville 7.5' Quadrangle

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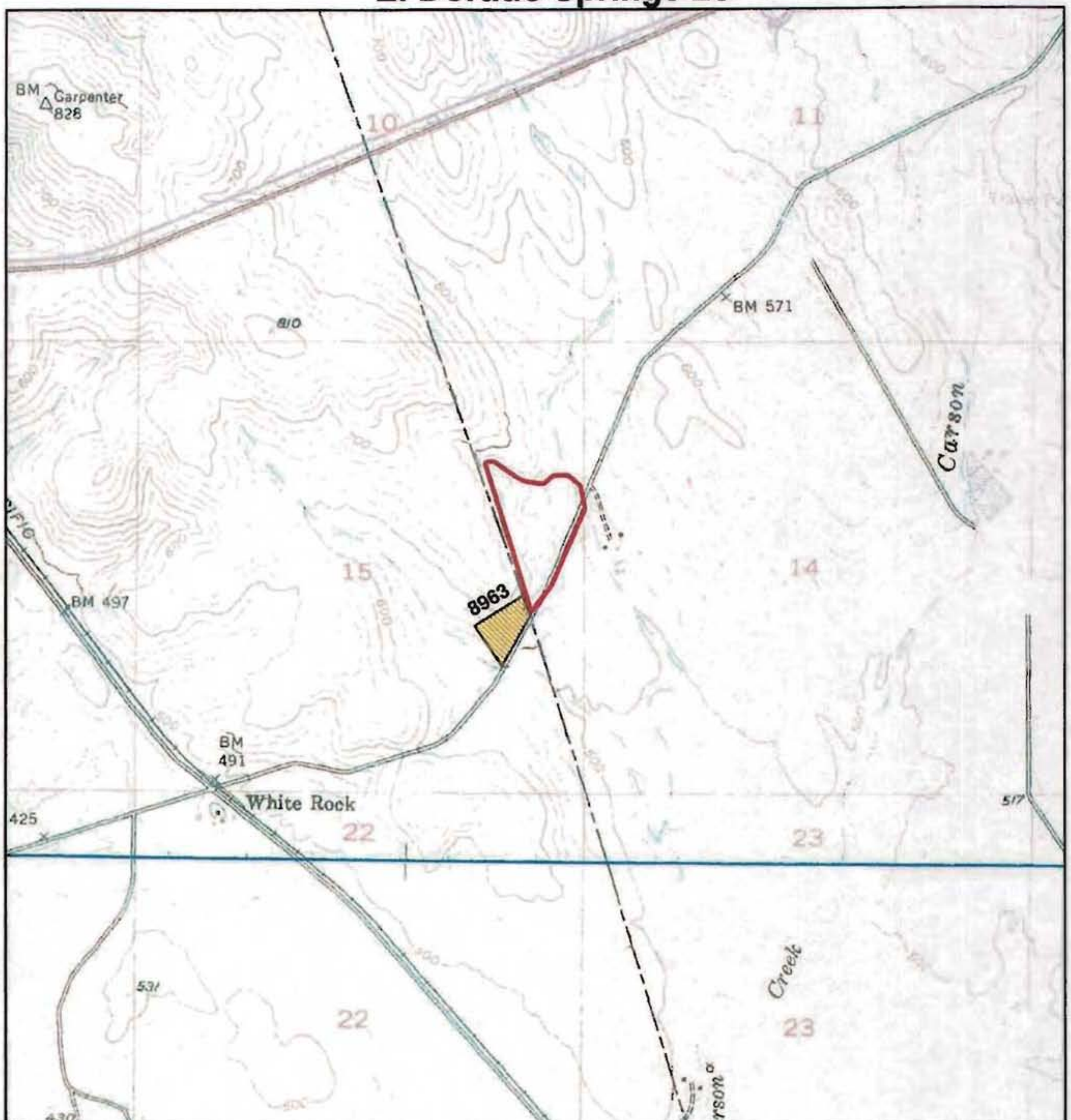
El Dorado Springs 23



Northeast Information Center
Records Search Results

Clarksville 7.5' Quadrangle

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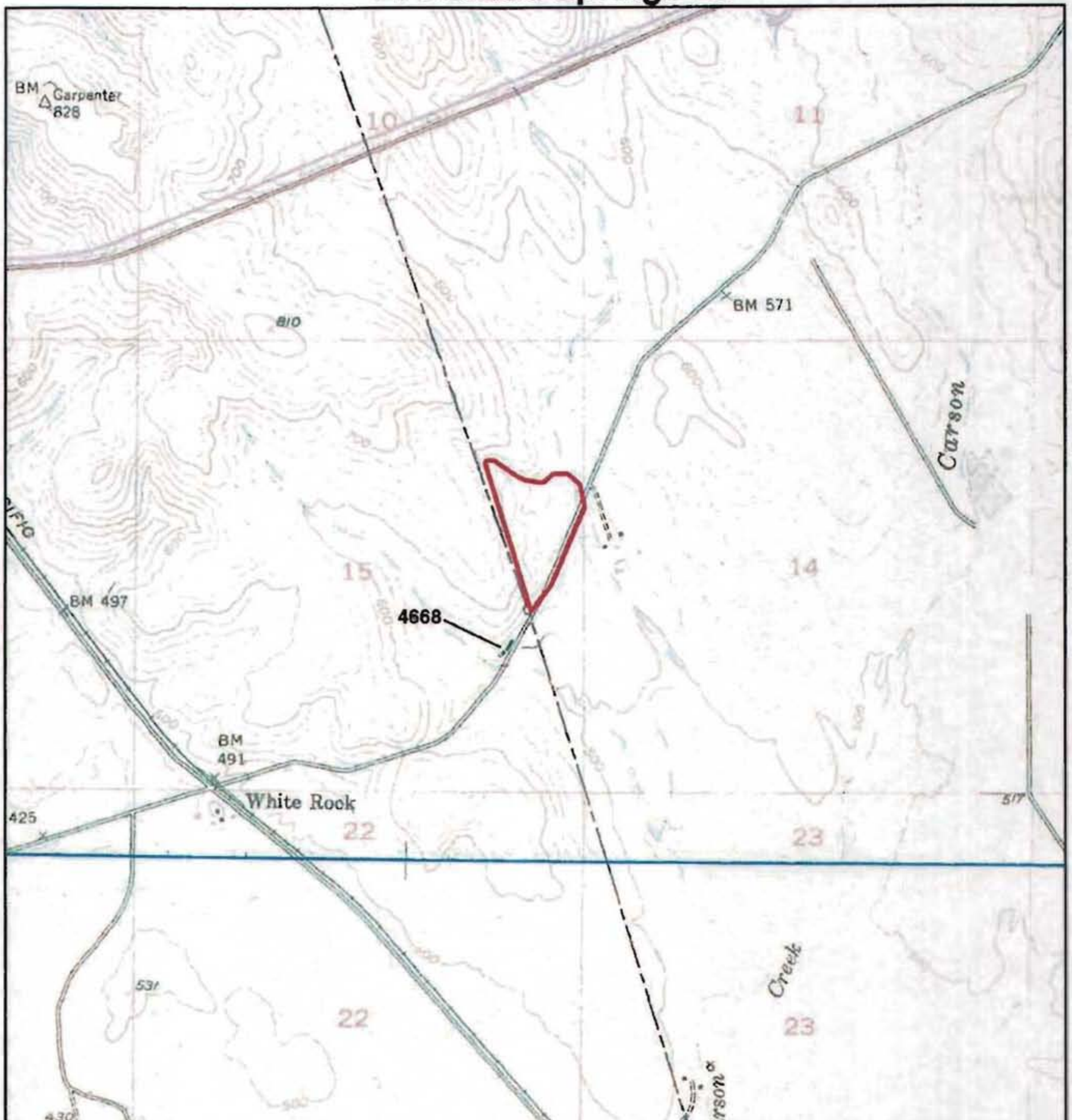

Northeast Information Center
Records Search Results

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Clarksville 7.5' Quadrangle

1 Resource

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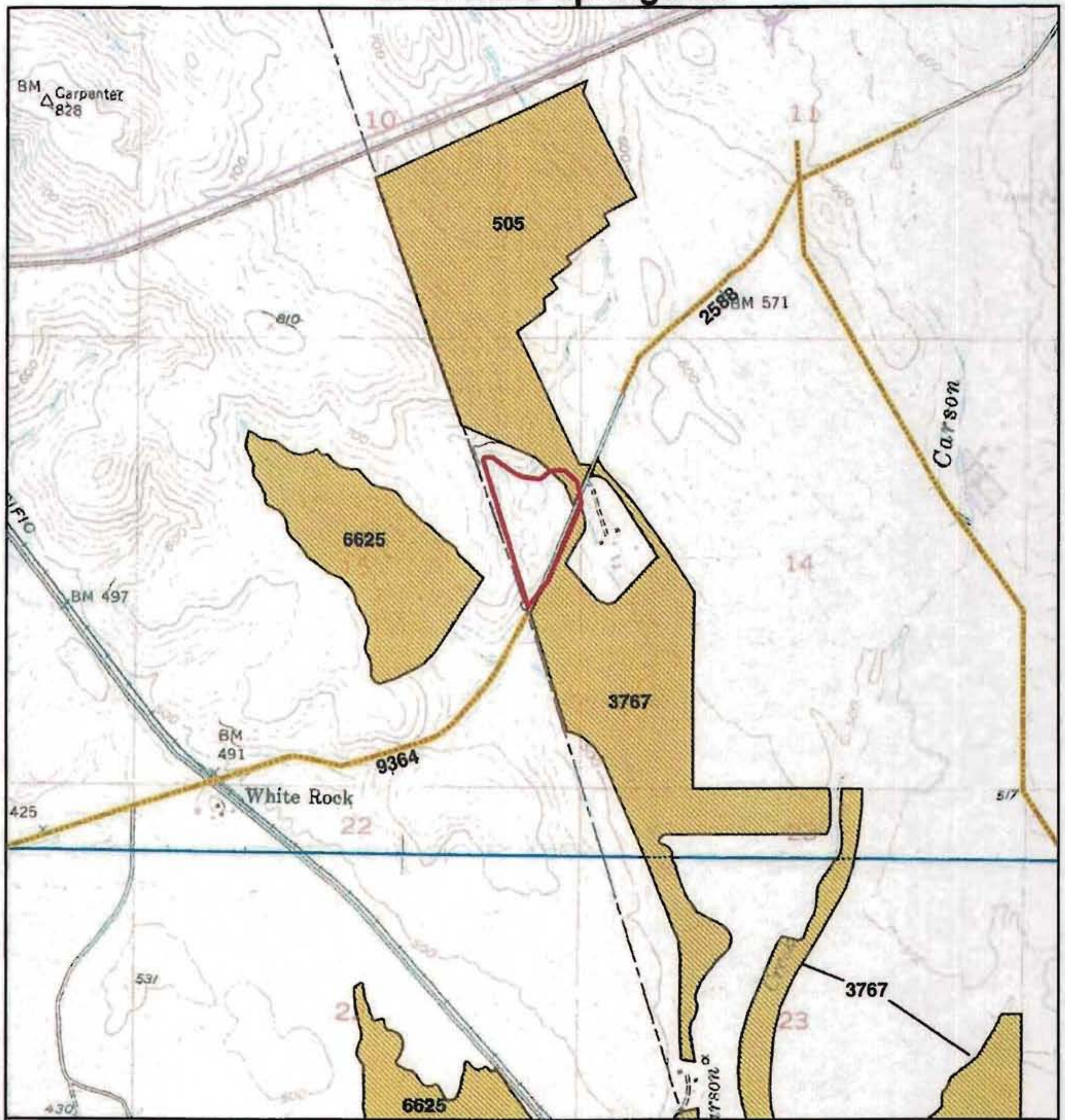
El Dorado Springs 23



Northeast Information Center
Records Search Results

Clarksville 7.5' Quadrangle

5 Reports

May depict confidential cultural resource locations.
Do not distribute.

California Historical Resource Status Codes

1	**Properties listed in the National Register (NR) or the California Register (CR)**
1D	Contributor to a district or multiple resource property listed in NR by the Keeper. Listed in the CR.
1S	Individual property listed in NR by the Keeper. Listed in the CR.
1CD	Listed in the CR as a contributor to a district or multiple resource property by the SHRC
1CS	Listed in the CR as individual property by the SHRC.
1CL	Automatically listed in the California Register – Includes State Historical Landmarks 770 and above and Points of Historical Interest nominated after December 1997 and recommended for listing by the SHRC.
2	**Properties determined eligible for listing in the National Register (NR) or the California Register (CR)**
2B	Determined eligible for NR as an individual property and as a contributor to an eligible district in a federal regulatory process. Listed in the CR.
2D	Contributor to a district determined eligible for NR by the Keeper. Listed in the CR.
2D2	Contributor to a district determined eligible for NR by consensus through Section 106 process. Listed in the CR.
2D3	Contributor to a district determined eligible for NR by Part I Tax Certification. Listed in the CR.
2D4	Contributor to a district determined eligible for NR pursuant to Section 106 without review by SHPO. Listed in the CR.
2S	Individual property determined eligible for NR by the Keeper. Listed in the CR.
2S2	Individual property determined eligible for NR by a consensus through Section 106 process. Listed in the CR.
2S3	Individual property determined eligible for NR by Part I Tax Certification. Listed in the CR.
2S4	Individual property determined eligible for NR pursuant to Section 106 without review by SHPO. Listed in the CR.
2CB	Determined eligible for CR as an individual property and as a contributor to an eligible district by the SHRC.
2CD	Contributor to a district determined eligible for listing in the CR by the SHRC.
2CS	Individual property determined eligible for listing in the CR by the SHRC.
3	**Appears eligible for National Register (NR) or California Register (CR) through Survey Evaluation**
3B	Appears eligible for NR both individually and as a contributor to a NR eligible district through survey evaluation.
3D	Appears eligible for NR as a contributor to a NR eligible district through survey evaluation.
3S	Appears eligible for NR as an individual property through survey evaluation.
3CB	Appears eligible for CR both individually and as a contributor to a CR eligible district through a survey evaluation.
3CD	Appears eligible for CR as a contributor to a CR eligible district through a survey evaluation.
3CS	Appears eligible for CR as an individual property through survey evaluation.
4	**Appears eligible for National Register (NR) or California Register (CR) through other evaluation**
4CM	Master List - State Owned Properties – PRC §5024.
5	**Properties Recognized as Historically Significant by Local Government**
5D1	Contributor to a district that is listed or designated locally.
5D2	Contributor to a district that is eligible for local listing or designation.
5D3	Appears to be a contributor to a district that appears eligible for local listing or designation through survey evaluation.
5S1	Individual property that is listed or designated locally.
5S2	Individual property that is eligible for local listing or designation.
5S3	Appears to be individually eligible for local listing or designation through survey evaluation.
5B	Locally significant both individually (listed, eligible, or appears eligible) and as a contributor to a district that is locally listed, designated, determined eligible or appears eligible through survey evaluation.
6	**Not Eligible for Listing or Designation as specified**
6C	Determined ineligible for or removed from California Register by SHRC.
6J	Landmarks or Points of Interest found ineligible for designation by SHRC.
6L	Determined ineligible for local listing or designation through local government review process; may warrant special consideration in local planning.
6T	Determined ineligible for NR through Part I Tax Certification process.
6U	Determined ineligible for NR pursuant to Section 106 without review by SHPO.
6W	Removed from NR by the Keeper.
6X	Determined ineligible for the NR by SHRC or Keeper.
6Y	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing.
6Z	Found ineligible for NR, CR or Local designation through survey evaluation.
7	**Not Evaluated for National Register (NR) or California Register (CR) or Needs Revaluation**
7J	Received by OHP for evaluation or action but not yet evaluated.
7K	Resubmitted to OHP for action but not reevaluated.
7L	State Historical Landmarks 1-769 and Points of Historical Interest designated prior to January 1998 – Needs to be reevaluated using current standards.
7M	Submitted to OHP but not evaluated - referred to NPS.
7N	Needs to be reevaluated (Formerly NR Status Code 4)
7N1	Needs to be reevaluated (Formerly NR SC4) – may become eligible for NR w/restoration or when meets other specific conditions.
7R	Identified in Reconnaissance Level Survey: Not evaluated.
7W	Submitted to OHP for action – withdrawn.

12/8/2003

SITE-NUMBER.	PRIMARY-NUM	NRS	EVL-DATE	PROGRAM REF.......	EVAL	OTHER NAMES AND NUMBERS.....
ELD-000017		6Y	05/10/01	ADOE-09-01-001-000	CCPR	FS# 05-03-56-0001, SAND FLAT CAMPGROUND
		6Y	05/10/01	USFS010410A	CCPR	
E[illegible]0058		2S	05/10/76	65000525	KPNP	WINJE SITE
		2S	11/28/78	078 0050081		
ELD-000083/H		2D2	08/04/94	ADOE-09-94-0001-0	GRPR	FS# 05-03-56-0054, MEISS MEADOW CAMP
		2D2	08/04/94	USFS940623B	GRPR	4-ELD-128 B
ELD-000084		2D2	08/04/94	ADOE-09-94-0001-0	GRPR	FS# 05-03-56-0050, BUCKSKIN T.S. TEMP.
		2D2	08/04/94	USFS940623B	GRPR	SITE #2
						4-ELD-127 B
ELD-000145		2S2	08/26/98	ADOE-09-98-003-00	JWPR	09-001248, 09-000233
		2S2	08/26/98	FHWA980804B	JWPR	
ELD-000146		6Y	10/22/91	ADOE-09-91-001-00	HKPR	MOTHER WELTY'S PLACE
		6Y	10/22/91	FHWA910829A	HKPR	
ELD-000166H		6Y	10/09/01	ADOE-09-01-011-000	AMPR	FS# 05-19--0119, SLTAS SITE NO. 1
		6Y	10/09/01	USFS010920B	AMPR	
ELD-000168		6Y	11/14/03	USFS030423A	JDPR	SLTAS SITE #9
ELD-000174		6Y	10/09/01	ADOE-09-01-010-000	AMPR	FS# 05-03-54-0061
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		6Y	11/29/01	USFS011107C	AMPR	
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						F-6-P (SF), F-6-P
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		2S2	01/09/92	BUR910822A	NDPR	
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ELD-000276H		6Y	06/18/97	USFS970423A	CCPR	FS# 05-03-56-0018, BALTIC TIMBER SALE T.S. #2
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ELD-000306		2D2	08/04/94	ADOE-09-94-0001-0	GRPR	FS# 05-03-56-0051, BVCHSKIN T.S. TEMP SITE #3
		2D2	08/04/94	USFS940623B	GRPR	
E[illegible]00307		2D2	08/04/94	ADOE-09-94-0001-0	GRPR	FS# 05-03-56-0052, BUCKSKIN T.S. TEMP SITE #4
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		6Y	01/15/04	COE031016C	CCPR	
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ELD-000674		6Y	02/23/90	USFS900126A		
ELD-000676		6Y	02/23/90	USFS900126A		COX CNYN TS CA-ELD-6
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ELD-000682		6Y	06/12/90	FHWA900208A	TVPR	
ELD-000685H		2S2	02/01/06	DOE-09-06-0001-999	CFPR	LOGTOWN HISTORIC MINING DISTRICT, POCAHONTAS MINE
		2S2	02/01/06	FHWA051117A	CFPR	
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ELD-000713		2D2	08/04/94	ADOE-09-94-0001-0	GRPR	
		2D2	08/04/94	USFS940623B	GRPR	
ELD-000721H		6Y	01/15/04	ADOE-09-04-001-000	CCPR	WHITE ROCK ROAD (SEGMENT PLACERVILLE RD, LINCOLN HWY, HWY 50
		6Y	01/15/04	COE031016C	CCPR	
ELD-000728		2S2	09/08/06	BUR030226A	MMPR	SLY PARK PICNIC GROUND SITE
ELD-000736		2D2	08/04/94	ADOE-09-94-0001-0	GRPR	
		2D2	08/04/94	USFS940623B	GRPR	
E[illegible]0737/H		2D2	08/04/94	ADOE-09-94-0001-1	GRPR	
		2D2	08/04/94	USFS940623B	GRPR	
ELD-000738		2D2	08/04/94	ADOE-09-94-0001-1	GRPR	
		2D2	08/04/94	USFS940623B	GRPR	
ELD-000836H		6Y	09/14/93	ADOE-09-93-001-00	CCPR	
		6Y	09/14/93	FHWA930624A	CCPR	

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # P-09-000809
HRI #/Trinomial CA-ELD-721H

☐ Continuation ☒ Update

Page 1 of 4 **Resource Name or #:** Sacramento-Placerville Road. Mormon Hill Road. Lincoln Highway

***P2d. UTM:** NAD 83, Zone 10N; 671876 mE/4280436 mN

***P3a. Description:** This continuation sheet provides updated information for, but does not replace, the original record for this resource. This site was originally recorded by Foothill Archaeological Resources in 1990 as a short historic road segment with a rock retaining wall. It has been rerecorded several times subsequently, and archival information has indicated that this segment is part of a larger road that includes a 2.6 mile portion White Rock/Silva Valley Road and a 2.25 mile section of Durock Road. as well as an abandoned section of the Mormon Hill Toll road within the Mormon Hill Historic District (P-09-001670) – to which the abandoned section is considered a contributing element.

This resource is part of the historic Sacramento to Placerville Road and the Lincoln Highway. Applied EarthWorks, Inc. located several of the originally recorded segments as well as a previously unrecorded segment for the Missouri Flat Reconductoring Project in 2012. The portion the comprises part of Durock Road has been evaluated as not eligible for the NRHP; the portion that comprises White Rock/Silva Valley Road has not yet been evaluated. The abandoned portion within the Mormon Hill Historic District has been evaluated as eligible for the NRHP as a contributing element to the district. The newly recorded portion, and the small portion recorded in 1990 are likely part of the Mormon Hill Toll road. These small sections have not yet been evaluated.

The previously unrecorded segment runs generally southeast to northwest for 70 meters (230 feet), following the contour of the slope north of Highway 50 and east of Bass Lake Road. The southeast terminus of the newly recorded road segment begins between two power lines, approximately 350 meters (1148 feet) west of the originally recorded segment. The road is obscured by low seasonal grasses and shrubs. The general dimensions of the new segment are consistent with those of the undisturbed and unpaved segments that have been reported previously. A location map showing the new segment as well as the previously recorded segments has been attached to this update. The original site record contains details of the previously recorded segments of the road.

***P8. Recorded by:** M. Armstrong, D. Price, A. Monastero, Applied EarthWorks, Inc., 1391 W. Shaw Ave, Fresno, CA 93711

***P9. Date:** May 5, 2012

***P11. Report Citation:** Armstrong, Matthew D., Mary Clark Baloian, and Andrew P. Monastero
2013 *Cultural Resources Survey for the Missouri Flat-Gold Hill 115 kV Reconductoring Project, El Dorado and Sacramento Counties, California.* Applied EarthWorks, Inc., Fresno, California, Prepared for Pacific Gas and Electric Company, Sacramento, California.

A15. References:

Hoffman, A., and Carole Denardo
2005 Site record for CA-ELD-721H. On file, North Central Information Center. Sacramento State University.

Derr, Eleanor, and Richard Derr
1997 Site record for CA-ELD-721H. On file, North Central Information Center. Sacramento State University.

Foster, Dan, and John Foster
1990 Site record for CA-ELD-721H. On file, North Central Information Center, Sacramento State University.

Forestry, David,
1994 Site record for CA-ELD-721H. On file, North Central Information Center, Sacramento State University.

Fryman, Leslie
2000 District record for P-09-001670. On file, North Central Information Center, Sacramento State University.

***Attachments:** ☐ NONE ☐ Building, Structure, and Object Record ☐ Photograph Record ☒ Location Map ☐ Archaeological Record ☐ Milling Station Record ☐ Other (list): ☐ Sketch Map ☐ District Record ☐ Rock Art Record ☐ Continuation Sheet ☐ Linear Feature Record ☐ Artifact Record

DPR 523L (1/95)

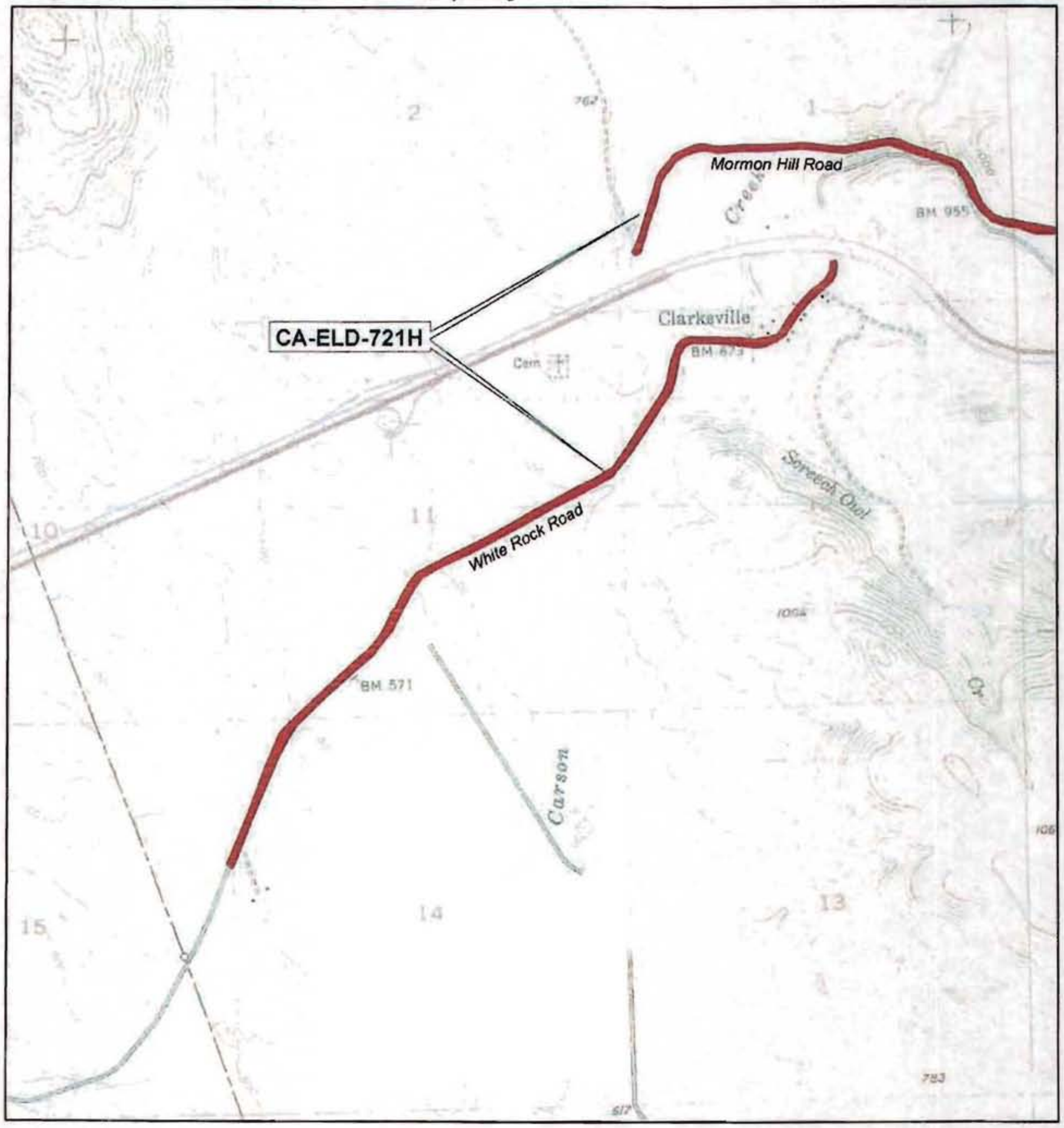
State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

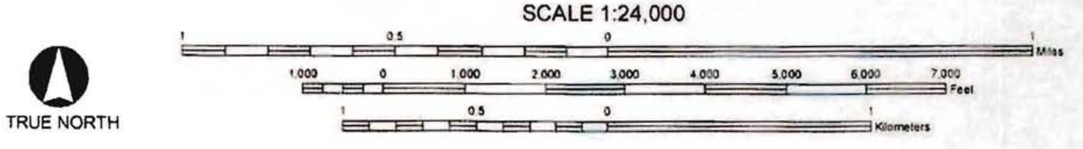
Primary # P-09-000809
HRI#
Trinomial CA-ELD-721H

Page 2 **of** 4 ***Resource Name or #:** Sacramento-Placerville Road, Mormon Hill Road, Lincoln Highway ***Scale:** 1:24,000

***Map Name:** Clarksville (1953, 1980), CA USGS 7.5' quadrangle ***Date:** 2012



SCALE 1:24,000



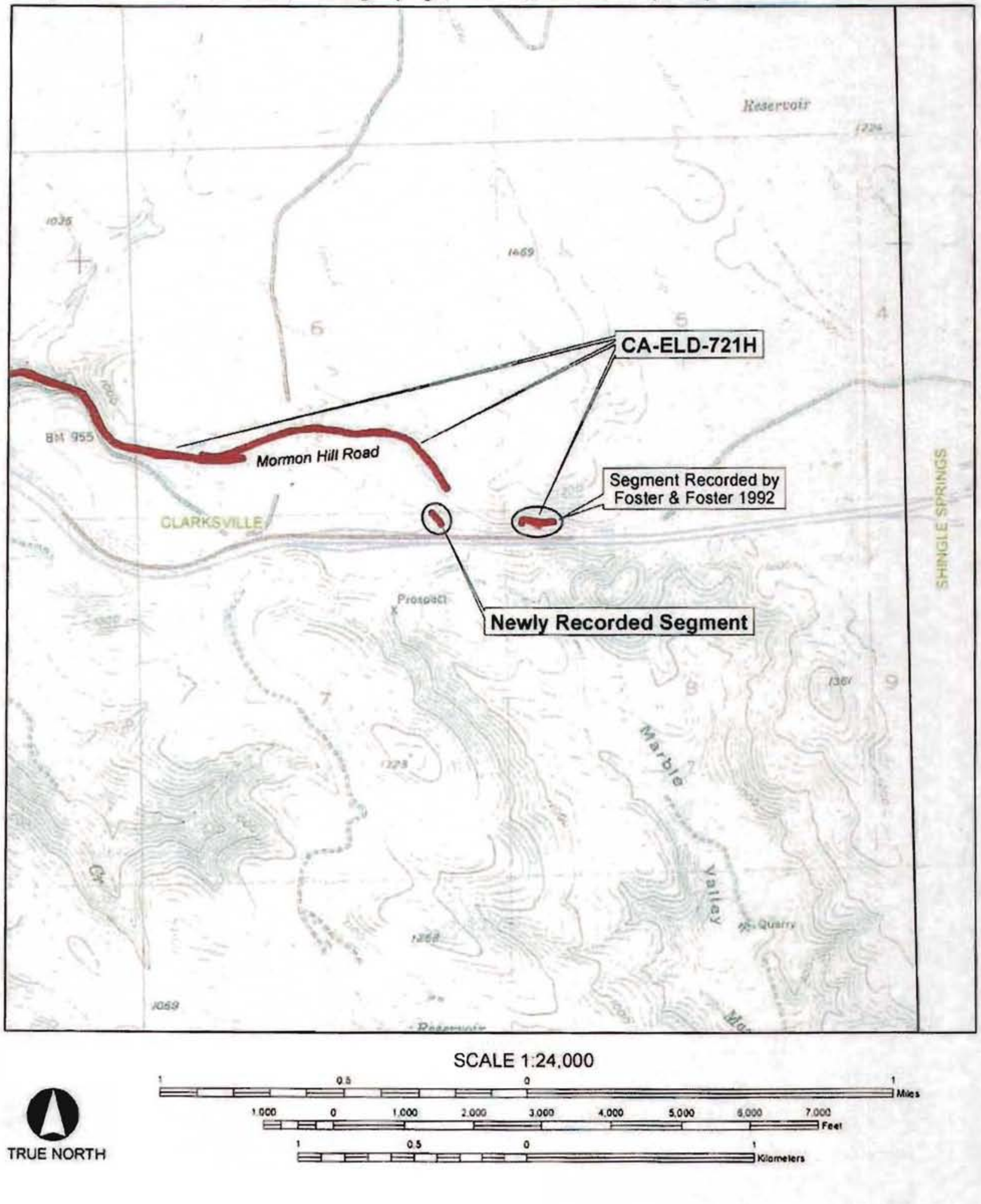
DPR 523J (1/95) *Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # P-09-000809
HRI#
Trinomial CA-ELD-721H

Page 3 of 4 *Resource Name or #: Sacramento-Placerville Road, Mormon Hill Road, Lincoln Highway *Scale: 1:24,000

*Map Name: Clarksville (1953, 1980) and Shingle Springs (1949, 1973), CA USGS 7.5' quadrangle *Date: May 2012



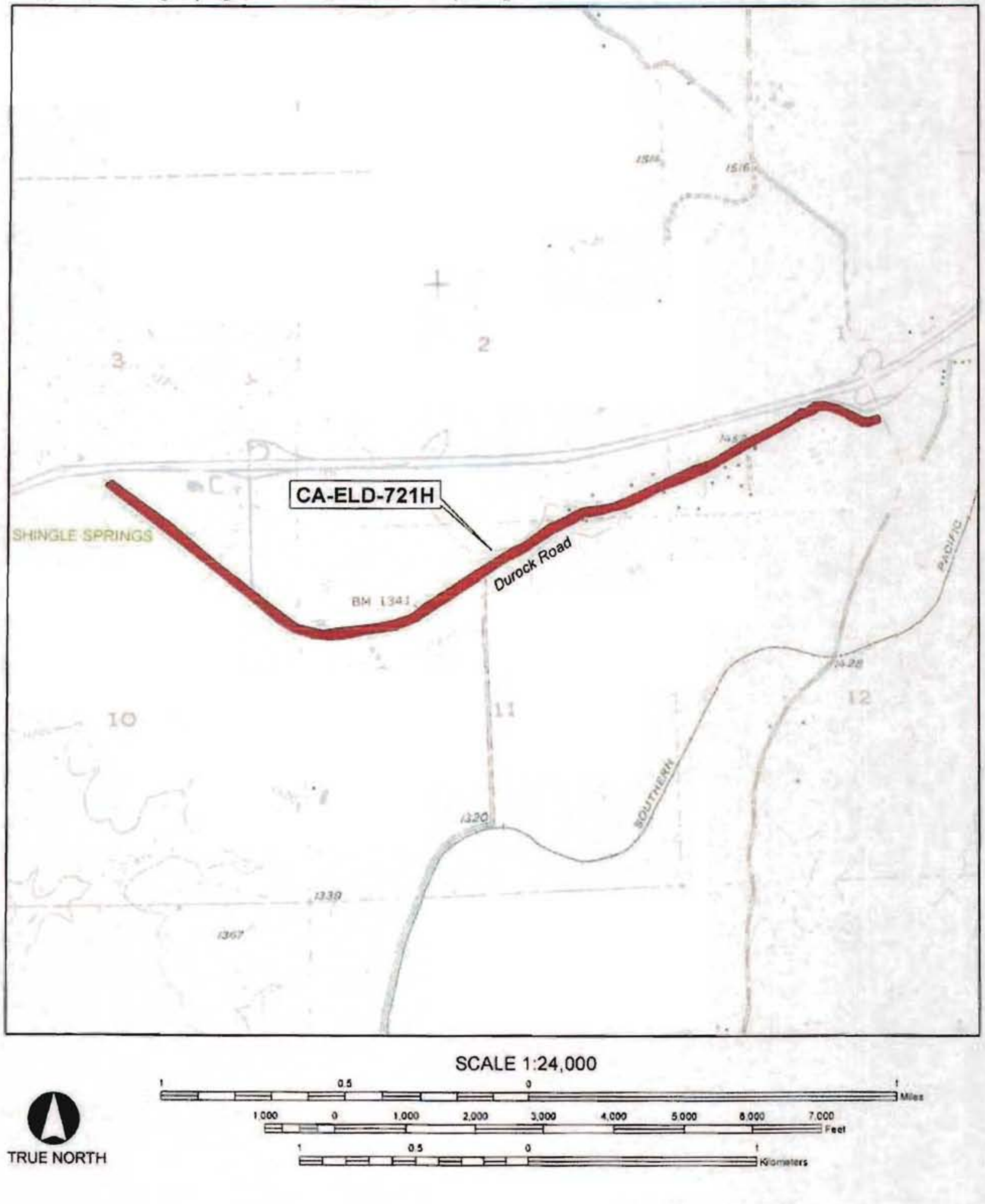
DPR 523J (1/95) *Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

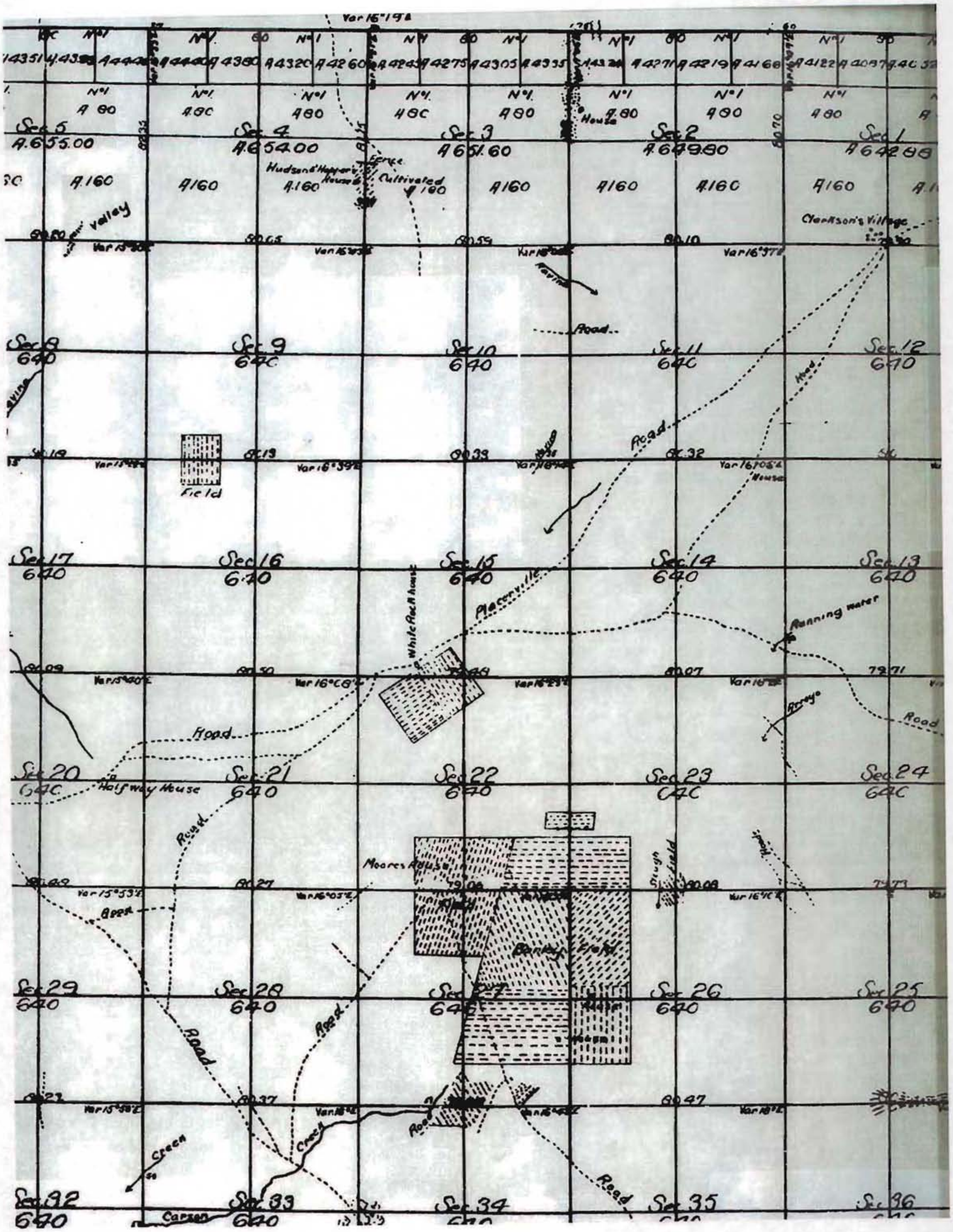
Primary # P-09-000809
HRI#
Trinomial CA-ELD-721H

Page 4 of 4 *Resource Name or #: Sacramento-Placerville Road, Mormon Hill Road, Lincoln Highway *Scale: 1:24,000

*Map Name: Shingle Springs (1949, 1973), CA USGS 7.5' quadrangle *Date: May 2012



DPR 523J (1/95) *Required information


Sec 5
Sec 4
Sec 3
Sec 2
Sec 1
Hudson & Hoppers House
Fence
Cultivated
House
valley
Clarkson's Village
Ravine
Road
Sec 8
640
Sec 9
640
Sec 10
640
Sec 11
640
Sec 12
640
Field
Road
House
Sec 17
640
Sec 16
640
Sec 15
640
Sec 14
640
Sec 13
640
Placerville
White Rock house
Running water
Arroyo
Road
Sec 20
640
Halfway House
Sec 21
640
Sec 22
640
Sec 23
640
Sec 24
640
Road
Moores House
Slough
Field
Sec 29
640
Sec 28
640
Sec 27
640
Sec 26
640
Sec 25
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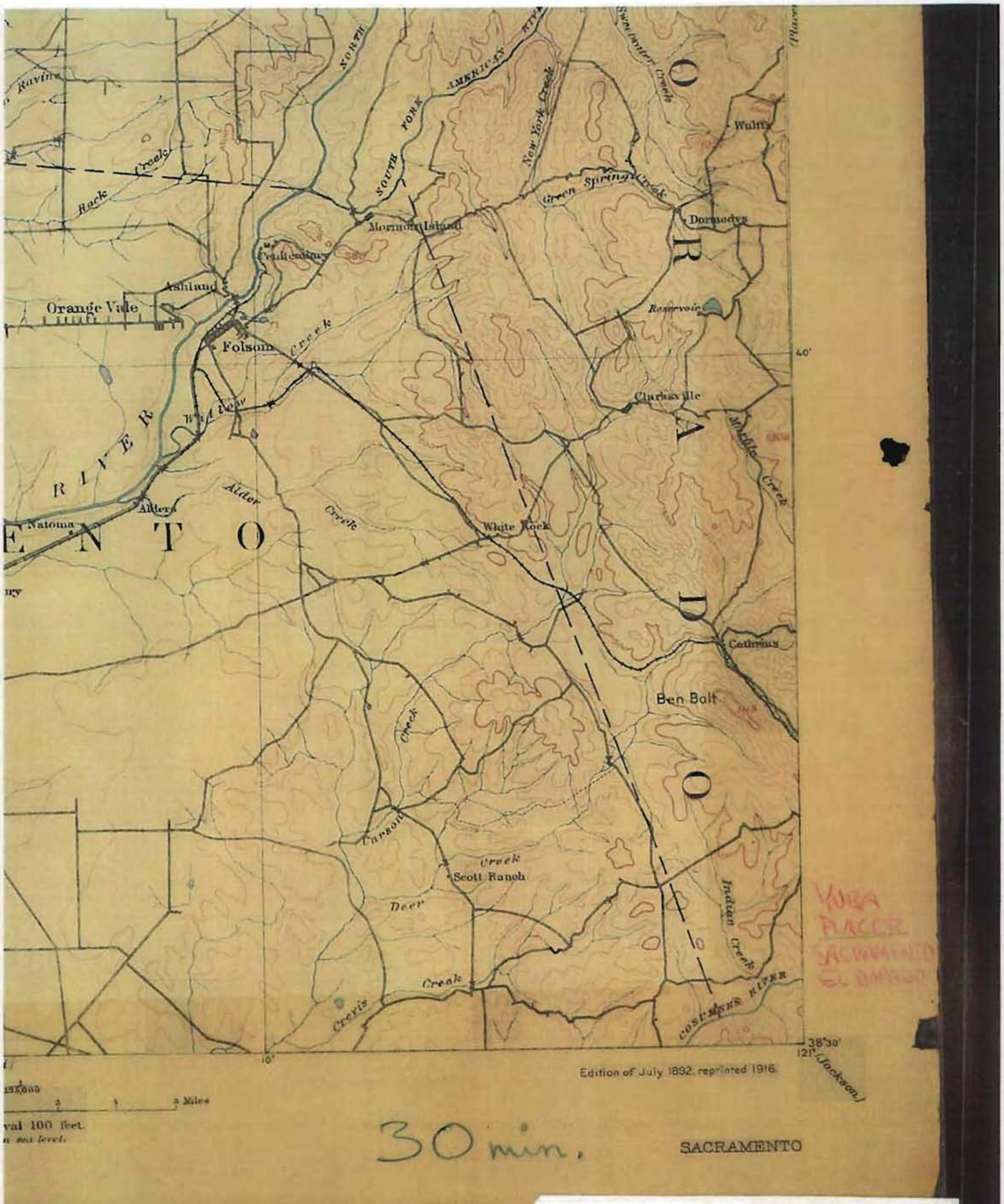
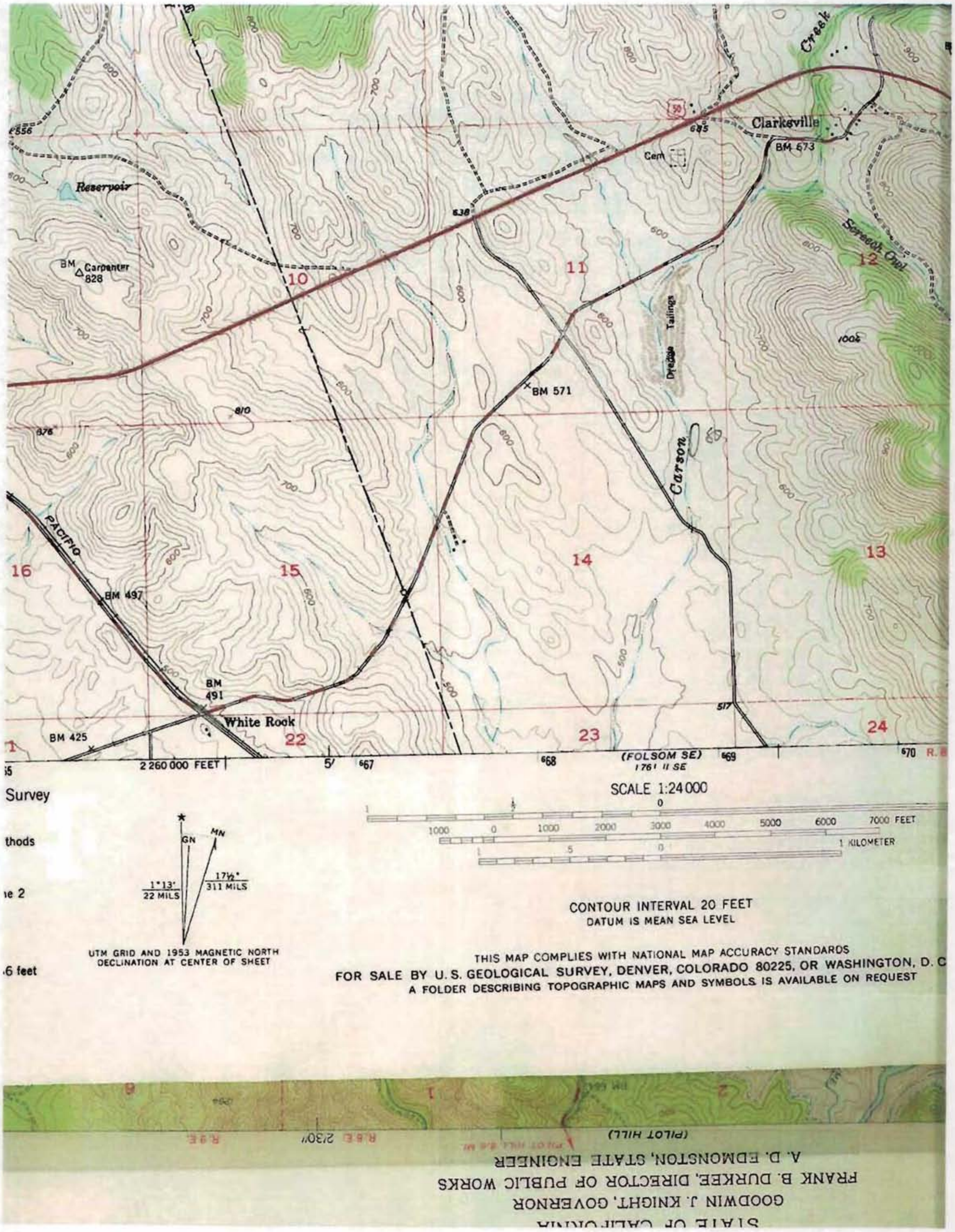
Road
Road
Creek
Creek
Road
Road
Sec 32
640
Sec 33
640
Carson
Sec 34
Sec 35
Sec 36



SACRAMENTO

(1887-8)



Clarksville
BM 673
Cem
Reservoir
BM Carpenter 828
BM 571
Dredge Tailings
Carson
Creek
PACIFIC
BM 497
BM 491
White Rock
BM 425
10
11
12
13
14
15
16
22
23
24
2 260 000 FEET
(FOLSOM SE)
Survey
SCALE 1:24 000
7000 FEET
1 KILOMETER
GN
MN
1°13'
22 MILS
17½°
311 MILS
UTM GRID AND 1953 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR WASHINGTON, D. C
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

APPENDIX C: NATIVE AMERICAN COORDINATION

CONTACT LOG

Native American Heritage Commission
1550 Harbor Boulevard
West Sacramento, CA 95691

June 18, 2014
Faxed letter request for Sacred Lands file search and list of Native American contacts.

June 18, 2014
Commission responded with the results of the file search (negative) and list of contacts.

Mr. Hermo Olanio
Vice Chairperson
Shingle Springs Band of Miwok Indians
P.O..Box 1340
Shingle Springs, CA 95682

June 26, 2014
Sub-consultant wrote a letter to the contact describing the project, enclosing a map and requesting information on any known or suspected sacred, ceremonial or other sites of Native American importance that may be impacted by the proposed project. No response to the letter was received.

July15, 2014
The sub-consultant attempted to reach the contact by telephone. The respondent indicated that the sub-consultant's letter had been forwarded to Daniel Fonseca, cultural Resource Director, Shingle Springs Band of Miwok Indians.

Mr. Gene Whitehouse
Chairperson
United Auburn Indian Community of the Auburn Rancheria
10720 Indian Hill Road
Auburn, CA 95603

June 26, 2014
Sub-consultant wrote a letter to the contact describing the project, enclosing a map and requesting information on any known or suspected sacred, ceremonial or other sites of Native American importance that may be impacted by the proposed project. No response to the letter was received.

July15, 2014
The sub-consultant attempted to reach the contact by telephone. There was no answer; therefore the sub-consultant left a detailed voice mail message. No further response was received.

Ms. Eileen Moon
Vice Chairperson
T'si-Akim Maidu
P.O. Box 1246
Grass Valley, CA 95945

June 26, 2014
Sub-consultant wrote a letter to the contact describing the project, enclosing a map and requesting information on any known or suspected sacred, ceremonial or other sites of Native American importance that may be impacted by the proposed project. No response to the letter was received.

July15, 2014
The sub-consultant attempted to reach the contact by telephone. There was no answer; therefore the sub-consultant left a detailed voice mail message. No further response was received.

Mr. Nicholas Fonseca
Chairperson
Shingle Springs Band of Miwok Indians
P.O. Box 1340
Shingle Springs, CA 95682

June 26, 2014
Sub-consultant wrote a letter to the contact describing the project, enclosing a map and requesting information on any known or suspected sacred, ceremonial or other sites of Native American importance that may be impacted by the proposed project. No response to the letter was received.

July15, 2014
The sub-consultant attempted to reach the contact by telephone. There was no answer; therefore the sub-consultant left a detailed voice mail message. No further response was received.

Mr. Grayson Coney
Cultural Director
T'si-Akim Maidu
P.O. Box 1316
Colfax, CA 95713

June 26, 2014
Sub-consultant wrote a letter to the contact describing the project, enclosing a map and requesting information on any known or suspected sacred, ceremonial or other sites of Native American importance that may be impacted by the proposed project. No response to the letter was received.

July15, 2014
The sub-consultant attempted to reach the contact by telephone. Mr. Coney remarked that the proposed project was too far south from his tribe. He suggested that local people should be apprized of the project.

Mr. Marcos Guerrero
Tribal Preservation Committee
United Auburn Indian Community of the Auburn Rancheria
10720 Indian Hill Road
Auburn, CA 95603

June 26, 2014
Sub-consultant wrote a letter to the contact describing the project, enclosing a map and requesting information on any known or suspected sacred, ceremonial or other sites of Native American importance that may be impacted by the proposed project. No response to the letter was received.

July15, 2014
The sub-consultant attempted to reach the contact by telephone. There was no answer; therefore the sub-consultant left a detailed voice mail message. No further response was received.

Ms. April Wallace Moore
19630 Placer Hills Road

Colfax, CA 95713

June 26, 2014
Sub-consultant wrote a letter to the contact describing the project, enclosing a map and requesting information on any known or suspected sacred, ceremonial or other sites of Native American importance that may be impacted by the proposed project. No response to the letter was received.

July15, 2014
The sub-consultant attempted to reach the contact by telephone. Ms. Moore indicated that the White Rock Road area has prehistoric and historic sites of concern. However, she did not indicate any specific information on such sites.

Mr. Daniel Fonseca
Cultural Resource Director
Shingle Springs Band of Miwok Indians
P.O. Box 1340
Shingle Springs, CA 95682

June 26, 2014
Sub-consultant wrote a letter to the contact describing the project, enclosing a map and requesting information on any known or suspected sacred, ceremonial or other sites of Native American importance that may be impacted by the proposed project. No response to the letter was received.

July15, 2014
The sub-consultant attempted to reach the contact by telephone. Mr. Fonseca did not respond. However, the sub-consultant left a detailed message. Ms. Kathy Frank of that office did respond by telephone on the same day. She asked when the letter was sent and the sub-consultant responded with the date so Ms. Frank could look up the letter and discuss it with Mr. Fonseca.

Ms. Judith Marks
Colfax-Todds Valley Consolidated Tribe
1068 Silverton Circle
Lincoln, CA 95648

June 26, 2014
Sub-consultant wrote a letter to the contact describing the project, enclosing a map and requesting information on any known or suspected sacred, ceremonial or other sites of Native American importance that may be impacted by the proposed project. No response to the letter was received.

July15, 2014
The sub-consultant attempted to reach the contact by telephone. There was no answer; therefore the sub-consultant left a detailed voice mail message. No further response was received.

Ms. Pamela Cubbler
Colfax-Todds Valley Consolidated Tribe
P.O. Box 734
Foresthill, CA 95631

June 26, 2014
Sub-consultant wrote a letter to the contact describing the project, enclosing a map and requesting information on any known or suspected sacred, ceremonial or other sites of Native American importance that may be impacted by the proposed project. No response to the letter was received.

July15, 2014
The sub-consultant attempted to reach the contact by telephone. Ms. Cubbler sought funding for construction monitors. The sub-consultant explained that our study was conducted in advance of construction and we were not involved in the construction, which may occur at some time in the future.

Mr. Jason Camp
SHPO
United Auburn Indian Community of the Auburn Rancheria
10720 Indian Hill Road
Auburn, CA 95603

June 26, 2014
Sub-consultant wrote a letter to the contact describing the project, enclosing a map and requesting information on any known or suspected sacred, ceremonial or other sites of Native American importance that may be impacted by the proposed project. No response to the letter was received.

July15, 2014
The sub-consultant attempted to reach the contact by telephone. There was no answer; therefore the sub-consultant left a detailed voice mail message. No further response was received.

Mr. Don Ryberg
Chairperson
T'si-Akim Maidu
P.O. Box 1246
Grass Valley, CA 95945

June 26, 2014
Sub-consultant wrote a letter to the contact describing the project, enclosing a map and requesting information on any known or suspected sacred, ceremonial or other sites of Native American importance that may be impacted by the proposed project. No response to the letter was received.

July15, 2014
The sub-consultant attempted to reach the contact by telephone. There was no answer; therefore the sub-consultant left a detailed voice mail message. No further response was received.

STATE OF CALIFORNIA

Edmund G. Brown Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION

1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

June 16, 2014

Ric Windmiller
2280 Grass Valley Highway #205
Auburn, CA 95603

Sent by Fax: (530) 878-0915
Number of Pages: 3

Re: El Dorado Springs 25, El Dorado County

Dear Mr. Windmiller:

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the Commission requests that you follow up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 373-3712.

Sincerely,

Katy Sanchez

Katy Sanchez
Associate Government Program Analyst

Native American Contact List

El Dorado County
June 18, 2014

Shingle Springs Band of Miwok Indians
Hermo Olanio, Vice Chairperson
P.O. Box 1340 — Miwok
Shingle Springs, CA 95682 — Maidu
nolanio@ssband.org
(530) 676-8010 Office
(530) 676-8033 Fax

United Auburn Indian Community of the Auburn Rancheria
Marcos Guerrero, Tribal Preservation Committee
10720 Indian Hill Road — Maidu
Auburn, CA 95603 — Miwok
mguerrero@auburnrancheria.com
(530) 883-2364 Office
(530) 883-2320 Fax

United Auburn Indian Community of the Auburn Rancheria
Gene Whitehouse, Chairperson
10720 Indian Hill Road — Maidu
Auburn, CA 95603 — Miwok
(530) 883-2390 Office
(530) 883-2380 Fax

April Wallace Moore
19630 Placer Hills Road — Nisenan - So Maidu
Colfax, CA 95713 — Konkow
(530) 637-4279 — Washoe

T' si-Akim Maidu
Eileen Moon, Vice Chairperson
P.O. Box 1246 — Maidu
Grass Valley, CA 95945
(530) 274-7497

Shingle Springs Band of Miwok Indians
Daniel Fonseca, Cultural Resource Director
P.O. Box 1340 — Miwok
Shingle Springs, CA 95682 — Maidu
(530) 676-8010 Office
(530) 676-8033 Fax

Shingle Springs Band of Miwok Indians
Nicholas Fonseca, Chairperson
P.O. Box 1340 — Miwok
Shingle Springs, CA 95682 — Maidu
nfonseca@ssband.org
(530) 676-8010 Office
(530) 676-8033 Fax

Colfax-Todds Valley Consolidated Tribe
Judith Marks
1068 Silverton Circle — Miwok
Lincoln, Ca 95648 — Maidu
(916) 580-4078

T' si-Akim Maidu
Grayson Coney, Cultural Director
P.O. Box 1316 — Maidu
Colfax, CA 95713
akimmaidu@att.net
(530) 383-7234

Colfax-Todds Valley Consolidated Tribe
Pamela Cubbler
P.O. Box 734 — Miwok
Foresthill, Ca 95631 — Maidu
(530) 320-3943
(530) 367-2093 home

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed El Dorado Springs, El Dorado County (Cullis)

Native American Contact List
El Dorado County
June 18, 2014

United Auburn Indian Community of the Auburn Rancheria
Jason Camp, THPO
10720 Indian Hill Road — Maidu
Auburn, CA 95603 — Miwok
jcamp@auburnrancheria.com
(916) 316-3772 Cell
(530) 883-2390

(530) 888-5476 - Fax

T' si-Akim Maidu
Don Ryberg, Chairperson
1239 East Main St — Maidu
Grass Valley, CA 95945
(530) 274-7497

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed El Dorado Springs 25, El Dorado County, Katy S

Ric Windmiller
CONSULTING ARCHAEOLOGIST

2280 GRASS VALLEY HIGHWAY #205
AUBURN, CALIFORNIA 95603

530/878-0979
FAX 530/878-0915

SAMPLE LETTER

June 26, 2014

Mr. Hermo Olanio
Vice Chairperson
Shingle Springs Band of Miwok Indians
P.O. Box 1340
Shingle Springs, CA 95682

Re: El Dorado Springs 23, El Dorado Hills, El Dorado County

Dear Mr. Olanio:

The applicant is seeking a Clean Water Act, Section 404 permit from the U.S. Army Corps of Engineers for development on 25 acres at El Dorado Hills, El Dorado County. The project is located along White Rock Road adjacent to an existing residential subdivision about one half mile south of U.S. 50 (see attached map).

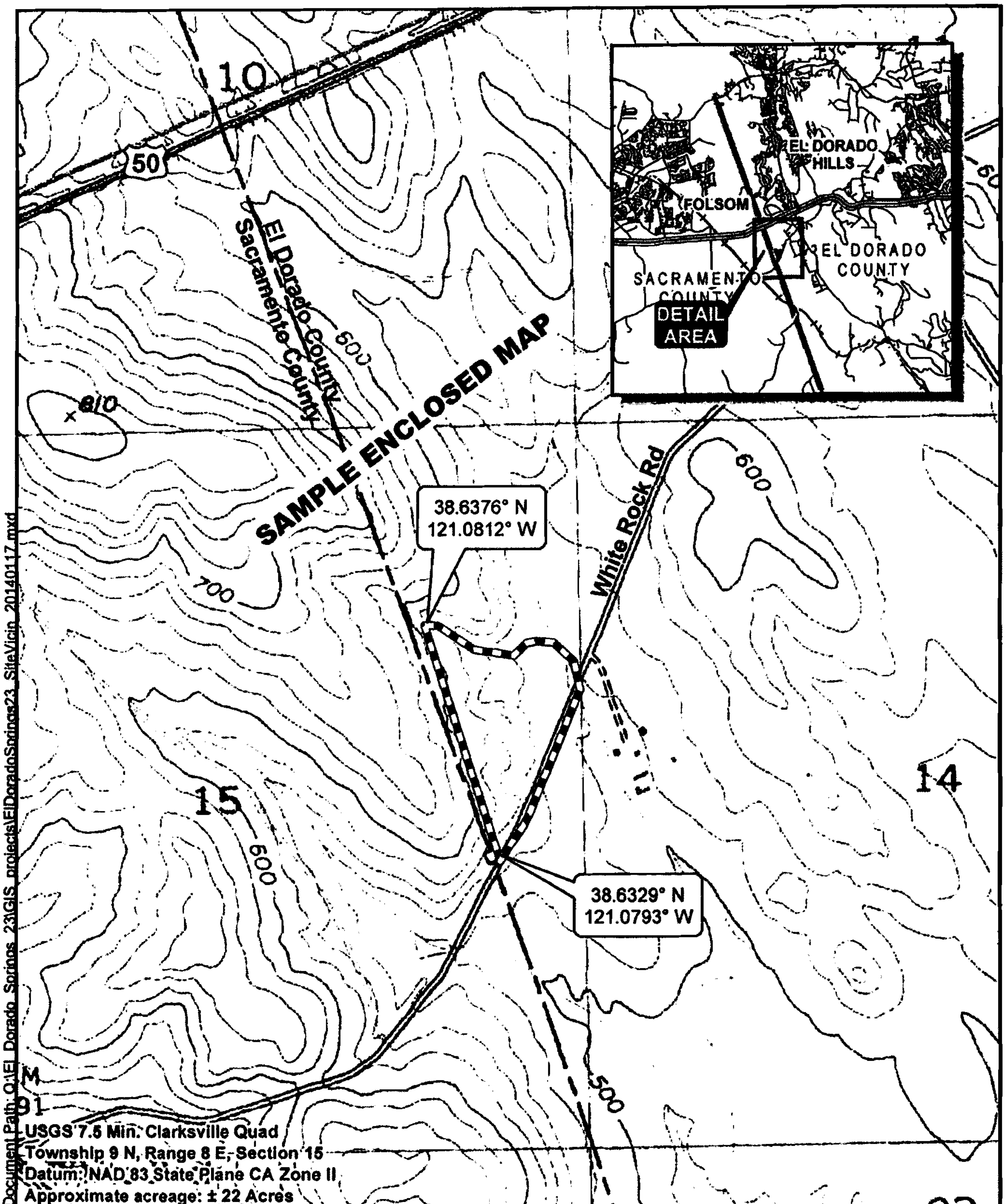
We are conducting research on cultural resources. The Native American Heritage Commission listed your name as one who may have knowledge of Native American cultural resources in the project area. If you have any information regarding known or suspected sacred, ceremonial or other sites of Native American importance that may be impacted by the proposed project, please feel free to contact Cathryn Chatterton at the above address. You may also respond by telephone (530-878-0979), fax (530-878-0915) or email: windmiller-consult@sbcglobal.net. We would appreciate a response at your earliest convenience, if you wish to comment at this time.

Yours sincerely,

Ric Windmiller

Ric Windmiller
Registered Professional Archaeologist

Enclosure



SITE AND VICINITY

FOOTHILL ASSOCIATES ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE ©2014	N	0 470 940 FEET 1 inch = 1,000 feet	Drawn By: MUB Date: 01/17/2014	FIGURE 1

EL DORADO SPRINGS 23 Document Name: ElDoradoSprings23_SiteVicin_20140117.mxd : 1/17/2014 3:56:42 PM

APPENDIX D: CONFIDENTIAL LOCATION OF ARCHAEOLOGICAL RESOURCES

This appendix contains information on the specific locations of archaeological resources. This information is not for publication or release to the general public. It is for planning, management and research purposes only. Information on the locations of prehistoric and historic sites are exempted from the California Freedom of Information Act, as specified in Government Code §6254.10.

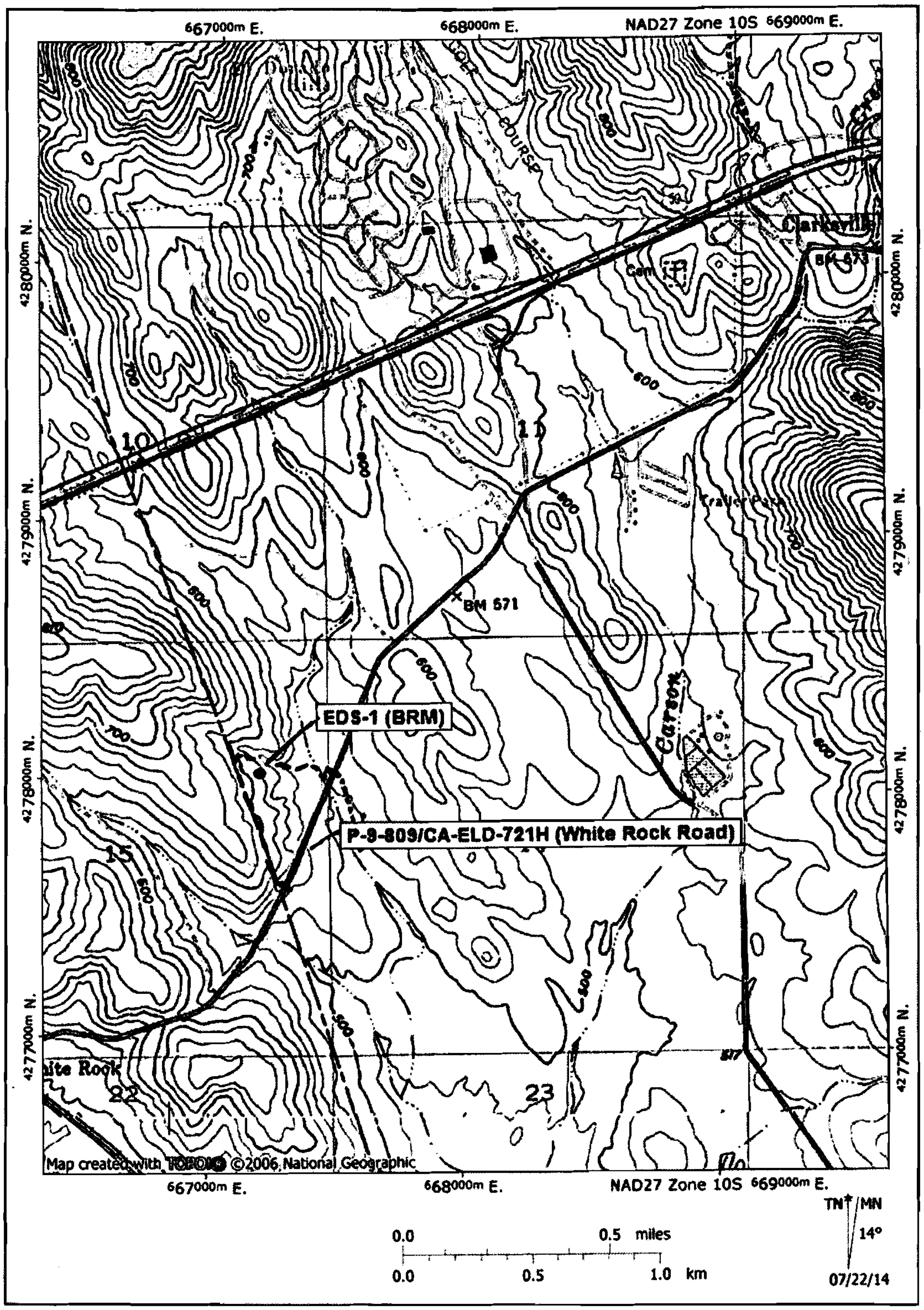


Figure 7. Confidential location of archaeological resources.

APPENDIX E: CONFIDENTIAL RECORD FORMS

This appendix contains information on the specific locations of archaeological resources. This information is not for publication or release to the general public. It is for planning, management and research purposes only. Information on the locations of prehistoric and historic sites are exempted from the California Freedom of Information Act, as specified in Government Code §6254.10.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 ***Resource Name or #:** (Assigned by recorder) EDS-1

P1. Other Identifier:

***P2. Location:** ☒ **Not for Publication** ☐ **Unrestricted** ***a. County** El Dorado
and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Clarksville **Date** 1953 (1981) **T** 9N ; **R** 8E ; NE ¼ **of** NE ¼ **of Sec** 15 ; MDM **B.M.**

c. Address City Zip

d. UTM: (Give more than one for large and/or linear resources) Zone 10 , 667160 mE/ 4278030 mN

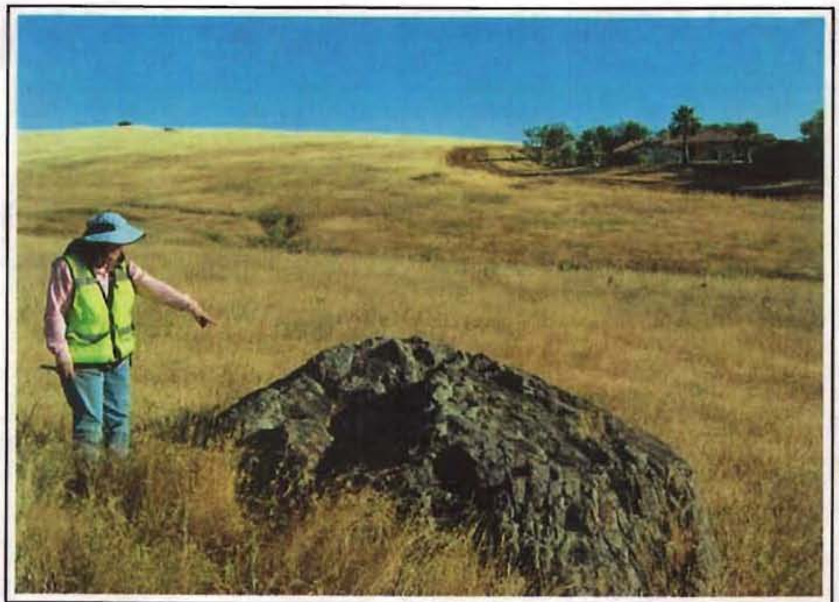
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

This minor archaeological resource is an isolated bedrock mortar on an outcrop of greenstone. The site is located 53 m west of a narrow, spring-fed drainage. The east-facing hill on which the site is located is a moderate slope. The outcrop measures 3.62m long, 3.18m wide and 1.20 m high. The single mortar hole is in a natural basin on the southwest portion of the outcrop. The shallow, conical shaped mortar hole measures 15cm diameter across the top, 4cm diameter across the bottom and 6cm deep. Surface scrapes were taken around the outcrop; no midden or other evidence of a cultural deposit was identified. Soil at this location is very shallow overlying decomposing greenstone.

***P3b. Resource Attributes:** (List attributes and codes) AP4. BRM

***P4. Resources Present:** ☐Building ☐Structure ☐Object ☐ Site ☐ District ☐ Element of District ☒ Other (Isolates, etc.)



P5b. Description of Photo: (view, date, accession #) Looking north; 7-5-2014

***P6. Date Constructed/Age and Sources:** ☐ Historic ☒ Prehistoric ☐ Both
Uknown period; no temporally diagnostic artifacts associated

***P7. Owner and Address:**
Unknown

***P8. Recorded by:** (Name, affiliation, and address) Ric Windmiller
Consulting Archaeologist
2280 Grass Valley Hwy #205

***P9. Date Recorded:** 7-5-2014

***P10. Survey Type:** (Describe)
Reconnaissance

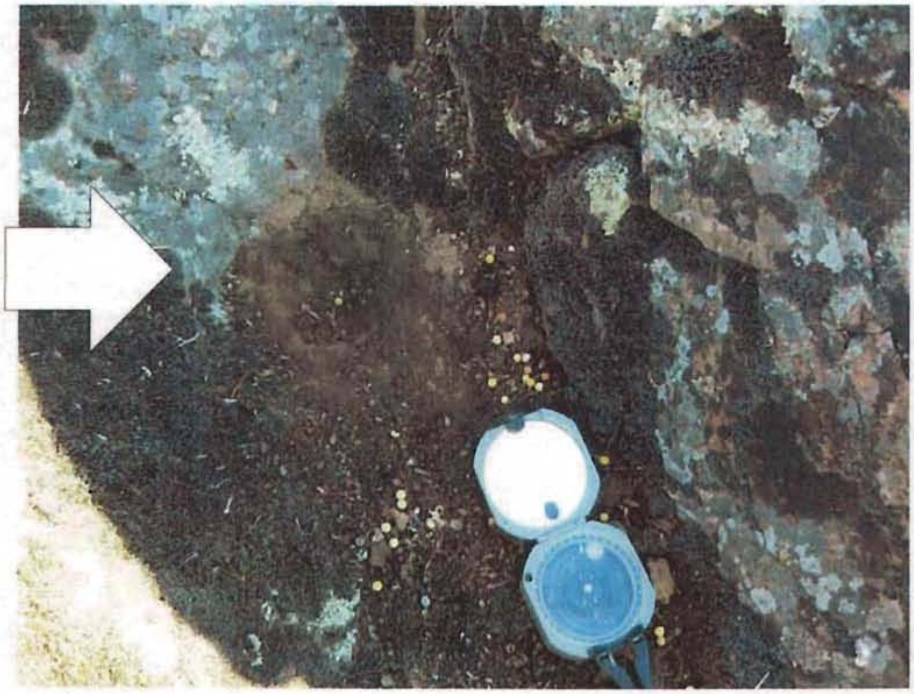
***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Windmiller, R. 2014. El Dorado Springs 23 Cultural Resources Inventory and Evaluation, El Dorado County, California. Ric Windmiller, Consulting Archaeologist. Submitted to Foothill Associates, Inc. Copies available from the North Central Information Center, California State University, Sacramento.

***Attachments:** ☐NONE ☒Location Map ☒Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
SKETCH MAP

Primary #
HRI#
Trinomial

Page 2 of 3
*Resource Name or # (Assigned by recorder) EDS-1
*Drawn by: Ric Windmiller
*Date of map: 7-5-2014



NOTE: The pocket transit is pointing at true north

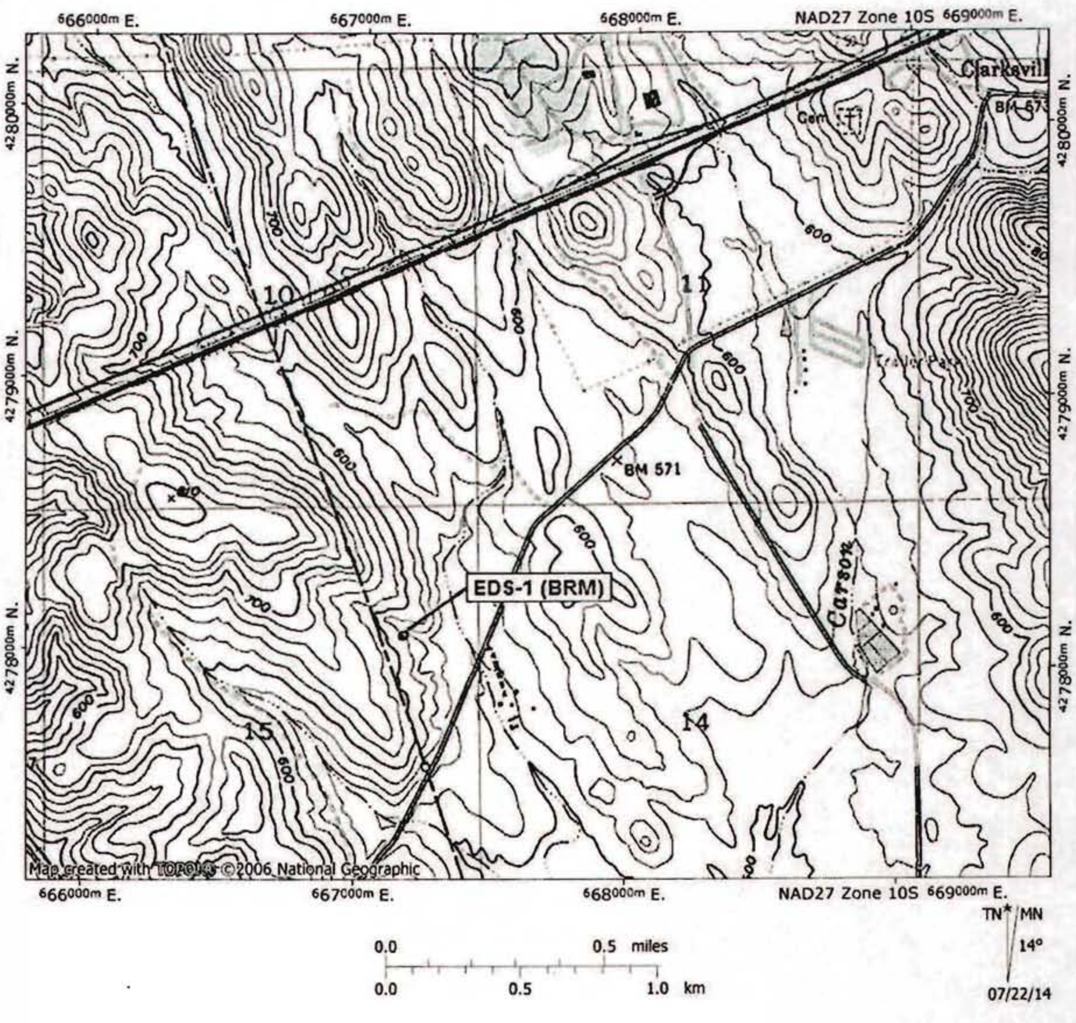
DPR 523K (1/95)

*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # ____________
HRI# ____________
Trinomial ____________

Page 3 of 3 *Resource Name or # (Assigned by recorder) EDS-1
*Map Name: Clarksville *Scale: 1:24,000 *Date of map: 1953 (1981)



DPR 523J (1/95) *Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # P-9-809
HRI #
Trinomial CA-ELD-721H

 ***Resource Name or #** (Assigned by recorder) White Rock Road
***Recorded by:** Ric Windmiller ***Date** 7-5-2014 ☐ Continuation ☒ Update

On July 5, 2014, Ric Windmiller, RPA conducted a pedestrian survey of the westernmost portion of White Rock Road in El Dorado County. Elsewhere, the road is recorded as CA-ELD-721H (P-9-809). The segment described in this updated form begins at the intersection of Stonebriar/4-Seasons drives (UTM A) and continues southwest 1,772 feet to the El Dorado-Sacramento County line (UTM B).

The current roadway is paved in asphalt that capped the old White Rock Road/Lincoln Highway's concrete roadway. As part of the previous White Rock Road Widening Project, the hill within a part of the 1,772-foot segment reported here was cut down 10 feet below the existing road. Therefore that particular segment of the old concrete road was removed. The remainder of 1,772 foot long road segment paved over the old concrete roadway.

The photo, below, shows the 1,772 foot long road segment as it appears today looking southwest towards the county line and in the background, White Rock Hill as seen from the intersection with Stonebriar and 4-Seasons Drives.

UTM coordinates: UTM A: Zone 10: 667460mE; 4278040mN. UTM B: Zone 10: 667260ME; 4277560mN

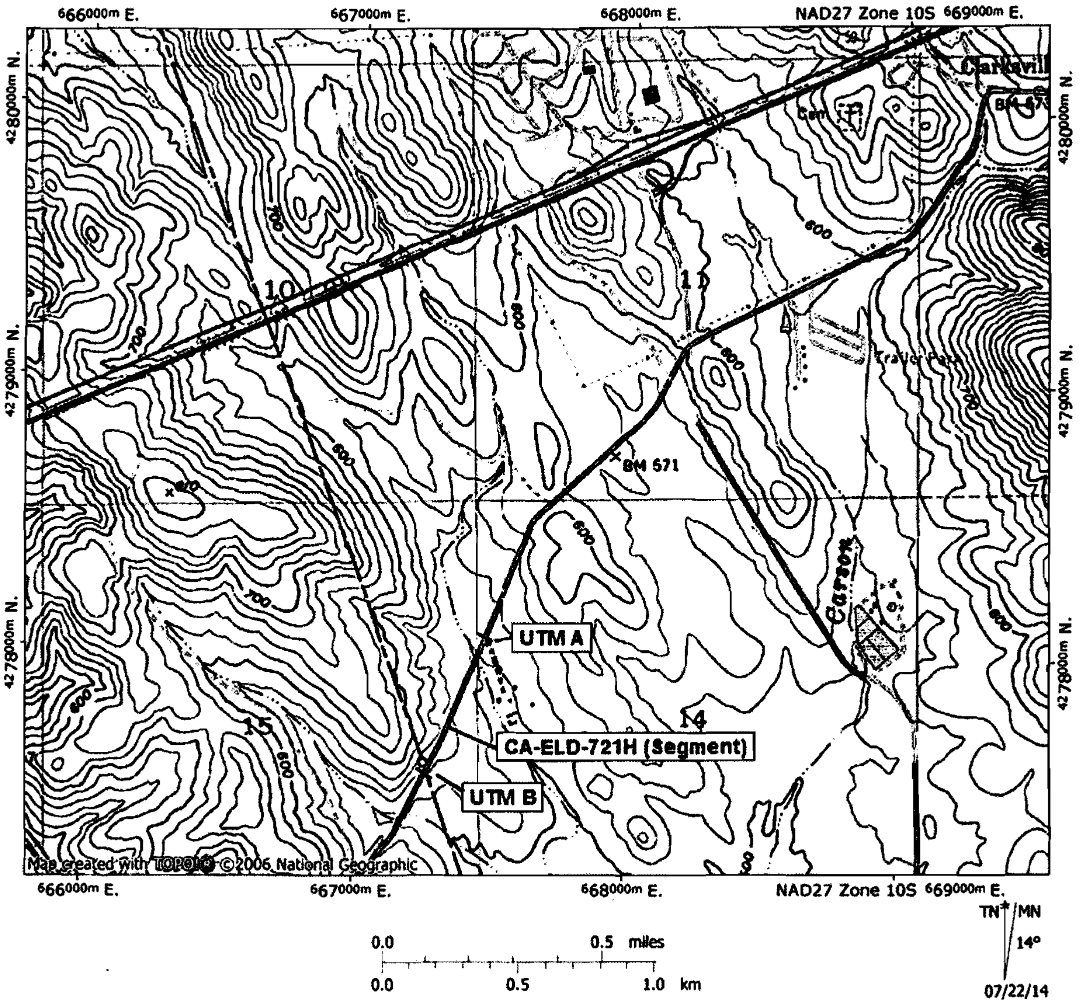
Report Citation:

Windmiller, R. 2014. *El Dorado Springs 23 Cultural Resources Inventory and Evaluation, El Dorado County, California.* Ric Windmiller, Consulting Archaeologist. Submitted to Foothill Associates, Inc. Copies available from the North Central Information Center, California State University, Sacramento.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # P-9-809
HRI#
Trinomial CA-ELD-721H

Page 2 of 2 *Resource Name or # (Assigned by recorder) White Rock Road
*Map Name: Clarksville *Scale: 1:24,000 *Date of map: 1953 (1980)



DPR 523J (1/95) *Required information

GEOTECHNICAL ENGINEERING STUDY
FOR
EL DORADO SPRINGS 23
El Dorado Hills, California

Project No. E13257.000
November 2013

YOUNGDAHL
CONSULTING GROUP, INC.

Building Innovative Solutions

ATTACHMENT 8

YOUNGDAHL
CONSULTING GROUP, INC.
Building Innovative Solutions
1234 Glenhaven Court, El Dorado Hills, Ca 95762
5750 Arabian Lane, Loomis, Ca 95650
ph 916.933.0633 fx 916.933.6482
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YOUNGDAHL CONSULTING GROUP INC. 25 YEARS

Project No. E13257.000
8 November 2013

Russell-Promontory, LLC
7700 College Town Drive, Suite 101
Sacramento, California 95826

Attention: Mr. Chris Donnelly

Subject: **EL DORADO SPRINGS 23**
El Dorado Hills, El Dorado County, California
GEOTECHNICAL ENGINEERING STUDY

Reference: 1) Executed Contract for El Dorado Springs 23, prepared by Youngdahl Consulting Group, Inc. (Project No. E13257.000).

Dear Mr. Donnelly:

In accordance with your authorization, Youngdahl Consulting Group, Inc. has performed a geotechnical engineering study for the project site located on the south side of Highway 50 in El Dorado Hills, California. The purpose of this study was to explore and evaluate the surface and subsurface soil conditions at the site and provide geotechnical information and design criteria for the proposed project appropriate to the observed site conditions. Our scope was limited to a subsurface investigation, laboratory testing, and preparation of this report.

Based upon our site reconnaissance, subsurface exploration program, laboratory testing, and engineering analysis, we believe the primary geotechnical issues to be addressed consist of excavations into the underlying bedrock, and the drainage issues related to the shallow bedrock conditions. Due to the non-uniform nature of soils, other geotechnical issues may become more apparent during mass grading operations which are not listed above. The descriptions, findings, conclusions and recommendations provided in this report are formulated as a whole; specific conclusions or recommendations should not be derived or used out of context. Please review the limitations and uniformity of conditions section of this report.

This report has been prepared for the exclusive use of Russell-Promontory, LLC and their consultants, for specific application to this project, in accordance with generally accepted geotechnical engineering practice. Should you have any questions or require additional information, please contact our office at your convenience.

Very truly yours,
Youngdahl Consulting Group, Inc.

Brandon K. Shimizu, P.E., G.E.
Senior Engineer

Distribution: (4) to Client

TABLE OF CONTENTS

GEOTECHNICAL ENGINEERING STUDY
FOR
EL DORADO SPRINGS 23

1.0 INTRODUCTION

This report presents the results of our Geotechnical Engineering Study performed for the proposed residential development planned to be constructed south of Highway 50 in El Dorado Hills, California. An annotated vicinity map is provided on Figure A-1 to identify the approximate project location.

Purpose and Scope

The purpose of this study was to explore and evaluate the surface and subsurface conditions at the site, to provide geotechnical information and design criteria, and to develop geotechnical recommendations for the proposed project. The scope of this study includes the following:

- A review of geotechnical and geologic data available to us at the time of our study;
- A field study consisting of a site reconnaissance, followed by an exploratory test pit program to observe and characterize the subsurface conditions;
- A laboratory testing program performed on representative samples collected during our field study;
- Engineering analysis of the data and information obtained from our field study, laboratory testing, and literature review;
- Development of geotechnical recommendations regarding earthwork construction including, site preparation and grading, excavation characteristics, soil moisture conditions, compaction equipment, engineered fill criteria, slope configuration and grading, underground improvements, and drainage;
- Development of geotechnical design criteria for seismic conditions, shallow foundations, differential support conditions, retaining walls, slabs on grade, and pavements;
- Preparation of this report summarizing our findings, conclusions, and recommendations regarding the above described information.

Project Understanding

We understand that the proposed development consists of a residential subdivision on 21.6 acres on the west side of White Rock Road just south of Stonebriar Drive. Grading plans have not yet been developed, but based on the topography, we estimate that the building pads will contain a combination of cuts and fills.

We understand that the proposed structures will be single family dwellings supported on shallow conventional foundations with slab on grade floors. Appurtenant project construction is expected to include installation of underground utilities, and asphalt concrete roadways.

Background

If studies or plans pertaining to the site exist and are not cited as a reference in this report, we should be afforded the opportunity to review and modify our conclusions and recommendations as necessary.

2.0 FINDINGS

The following section describes our findings regarding the site conditions that we observed during our site reconnaissance and subsequent subsurface exploration. In addition, this section also provides the results of our laboratory testing, geologic review, and engineering assessment/analysis related to the project site.

Surface Observations
The El Dorado Springs 23 project consists of approximately 21.6 acres in a roughly triangular shaped parcel that is comprised of a steep west-east trending ridge. The site is bounded by an existing residential development to the north/northeast, by White Road to the east/southeast, and by undeveloped land to the west. Topographic relief ranges from about 620 feet at the west end of the site down to about 525 feet at the east end of the site. Within the topography are two seasonal drainage swales, one prominent swale located immediately north of the project site and a second less prominent swale located within the central portion of the project site. Vegetation includes a moderate to thick growth of seasonal grasses.

Subsurface Conditions
Our field study included a site reconnaissance by a representative of our firm followed by a subsurface exploration program conducted on 11 October 2013. The exploration program included the excavation of 8 exploratory test pits under the direction of our representative at the approximate locations shown on Figure A-2, Appendix A. A description of the field exploration program is provided in Appendix A.

Test Pits TP-1 and TP-3 through TP-6 encountered surface soils comprised predominantly of sandy CLAYS in a soft to very stiff and dry to moist condition to depths approaching 1 to 2 feet. Test Pits TP-2, TP-7 and TP-8 encountered surface soils comprised predominantly of sandy SILTS in a soft to very stiff and dry to moist condition from the surface to depths ½ to 3½ feet. Underlying the surface soils in Test Pit TP-8, a layer of sandy CLAY in a medium stiff and moist condition was encountered to depths approaching 5 feet. Underlying the native soils, weathered metavolcanic bedrock was encountered for the maximum depth explored in each test pit.

A more detailed description of the subsurface conditions encountered during our subsurface exploration is presented graphically on the "Exploratory Test Pit Logs", Figures A-3 through A-10, Appendix A. These logs show a graphic interpretation of the subsurface profile, and the location and depths at which samples were collected.

Groundwater Conditions
Seepage from perched groundwater conditions was encountered in Test Pit TP-8. Generally, subsurface water conditions vary in the foothill regions because of many factors such as, the proximity to bedrock, fractures in the bedrock, topographic elevations, and proximity to surface water. Some evidence of past repeated exposure to subsurface water may include black staining on fractures, clay deposits, and surface markings indicating previous seepage. Based on our experience in the area, at varying times of the year water may be perched on less weathered rock and/or present in the fractures and seems of the weathered rock found beneath the site. No active springs were observed at the time of our field study.

Geologic Conditions
The geologic portion of this report included a review of geologic data pertinent to the site, and an interpretation of our observations and the exploratory test pits excavated during the field study. The site is located within the western foothills region of the Sierra Nevada Mountain Range. According to the General Geologic Map of the Folsom 15-Minute Quadrangle (R.C. Lloyd, et. al., 1984) this portion of the foothills and the project area are underlain Copper Hill Volcanics of Jurassic Age.

Seismicity
According to the Fault Activity Map of California and Adjacent Areas (Jennings, 2010) and the Peak Acceleration from Maximum Credible Earthquakes in California (CDMG, 1992), no active faults or Earthquake Fault Zones (Special Studies Zones) are located on the project site. Additionally, no evidence of recent or active faulting was observed during our field study. The

nearest mapped potentially active and active faults pertinent to the site are summarized in the following table.

Table 1: Local Active and Potentially Active Faults

Activity	Fault Name	Distance, Direction
Active	Dunnigan Hills	66 km W
Active	North Tahoe Fault	100 km NE
Active	West Tahoe Fault	88 km NE
Potentially Active	Bear Mountains Fault Zone - East	13 km E
Potentially Active	Bear Mountains Fault Zone - West	2 km E
Potentially Active	Maidu Fault	14 km NE
Potentially Active	Melones - West	18 km E
Potentially Active	Melones - East	22 km E

Based on our literature review of shear-wave velocity characteristics of geologic units in California (Wills and Silva; August 1998: Earthquake Spectra, Volume 14, No. 3) and subsurface interpretations, we recommend that the project site be classified as Site Class C in accordance with Table 1613.5.2 of the 2010 CBC.

Earthquake Induced Liquefaction, Surface Rupture Potential, Slope Instability and Settlement

Liquefaction is the sudden loss of soil shear strength and sudden increase in porewater pressure caused by shear strains, as could result from an earthquake. Research has shown that saturated, loose to medium-dense sands with a silt content less than about 25 percent and located within the top 40 feet are most susceptible to liquefaction, surface rupture/lateral spreading and seismically induced settlement. Slope instability can occur as a result of seismic ground motions and/or in combination with weak soils and saturated conditions.

Due to the absence of permanently elevated groundwater table, the relatively low seismicity of the area and the relatively shallow depth to bedrock, the potential for seismically induced damage due to liquefaction, surface ruptures, settlement and slope instability is considered negligible. For the above-mentioned reasons mitigation for these potential hazards is not typically practiced in the geographic vicinity of the project.

Laboratory Testing

Laboratory testing of the collected samples was directed towards determining the physical and engineering properties of the soil underlying the site. A description of the tests performed for this project and the associated test results are presented in Appendix B. In summary, the following tests were performed for the preparation of this report:

Table 2: Laboratory Tests

Laboratory Test	Test Standard	Summary of Results	
Direct Shear	ASTM D3080	Bulk 2:	$\Phi = 31.4°$, c = 267 psf
Maximum Dry Density	ASTM D1557	Bulk 2:	DD = 129.0 pcf, MC = 12.5%
R-Value	Caltrans 301F	Bulk 2:	7
Plasticity Index	ASTM D4318	Bulk 1:	LL = 55, PI = 33
Corrosivity Suite	CA DOT Tests 417, 422 and 643	See Soil Corrosivity Section	

Soil Expansion Potential
Some of the test pits encountered surface soils comprised of plastic materials (clay soils) overlying the bedrock or as clay coatings within the fractured rock; however, the materials encountered in our explorations were generally non-plastic (rock, sand, and silt). The non-plastic materials are generally considered to be non-expansive. Due to the limited presence of plastic materials observed, we do not anticipate that special design considerations for expansive soils will be required for the design or construction of the proposed improvements provided the plastic materials are adequately blended with the non-plastic site soils prior to use as engineered fill during the site grading procedures. Depending on the proposed grading plans and cuts or fills in the areas where clay was encountered, some focused excavations of the clay may be required. If necessary, recommendations can be made based on our observations at the time of construction should greater quantities of expansive soils be encountered at the project site which were not disclosed during our study.

Soil Corrosivity
A corrosivity testing suite consisting of soil pH, resistivity, sulfate, and chloride content tests were performed on a selected soil sample collected during our site exploration. The laboratory test results (provided by Sunlab, Inc.) are provided in Appendix B and are summarized in Table 3, below.

Table 3: Corrosivity Summary

Location	Depth (ft)	Soil pH	Minimum Resistivity ohm-cm (x1000)	Chloride (ppm)	Sulfate (ppm)	Caltrans Environment	ACI Environment
TP-1	1.0	6.16	0.86	9.0	1.0	Potentially Corrosive	Non-Corrosive

According to Caltrans Corrosion Guidelines Version 1.0, September 2003, the test results appear to indicate a potentially corrosive environment. According to the 2010 California Building Code Section 1907.7.6 and ACI 318 Table 4.3.1, the test results indicate the onsite soils have a negligible potential for sulfide attack of concrete. Accordingly, Type I/II Portland cement is appears acceptable for use in concrete construction. However, we are not corrosion specialists, and a certified corrosion engineer should be consulted to review the above test results and site conditions in order to develop specific mitigation recommendations (if deemed necessary) for any structural elements designed to be in contact with or buried in soil.

Naturally Occurring Asbestos
Asbestos is classified by the EPA as a known human carcinogen. Naturally occurring asbestos (NOA) has been identified as a potential health hazard. The California Geological Survey published a map in 2000 (Open File Report 2000-02) that qualitatively indicates the likelihood for NOA in western El Dorado County. El Dorado County has adapted the map from Open File Report 2000-02 into an asbestos review map. All projects within zones identified in the map, plus ¼-mile buffers around the asbestos management areas, or that are in proximity to the new discoveries periodically added to the map, are subject to special dust control and asbestos mitigation requirements. This project is not located in a NOA review area.

3.0 DISCUSSION AND CONCLUSIONS

General
Based upon the results of our field explorations, findings, and analysis described above, it is our opinion that construction of the proposed improvements is feasible from a geotechnical standpoint, provided the recommendations contained in this report are incorporated into the design plans and implemented during construction.

Grading Operations
The upper 12 to 18 inches of portions of the native soils are relatively loose/soft and are not considered suitable for support of the proposed improvements in their current condition. Recommendations are presented below for the recompaction of these materials. Additional excavation into these soils may be necessary in thicker deposits for keyway excavation.

Foundations
In our opinion, conventional shallow foundations such as isolated pad footings or continuous footings will provide adequate support for the proposed buildings if the site grades are properly prepared as described in the Site Grading and Improvement section. Recommendations regarding foundation design parameters, including allowable bearing capacity, lateral resistance, and foundation configuration are provided in Section 4.1 of this report.

Drainage
Proper application of drainage practices are considered to be of paramount concern for effective development of the project site. The site is located within the foothills where shallow bedrock conditions are present, and the potential for moisture related issues associated with this condition exist. As such, the use of plug and drain systems within the utilities, proper surface drainage, and careful installation of the subdrain and back of wall drains detailed in this report are crucial in providing long term stability of the structural improvements as well as to mitigate nuisance seepage.

It has also been our experience that potential sources of groundwater may not be present or observed during the site grading procedures, but can appear later as more persistent seepage as water becomes perched or flows through fractures of the shallow rock horizon. These conditions generally become more prevalent following upgradient development and the addition of moisture sources (i.e. landscape irrigation, run-off, etc.). Where this condition arises, drainage measures may be necessary on a lot by lot basis to mitigate seepage conditions that were not initially observed during the site grading activities and/or lot development. The developer should notify future lot owners of this potential.

4.0 SITE GRADING AND EARTHWORK IMPROVEMENTS

Site Preparation
Preparation of the project site should involve site drainage controls, dust control, clearing and stripping, recompaction of existing soft/loose native soils, expansive clay mitigation, and exposed grade compaction considerations. The following paragraphs state our geotechnical comments and recommendations concerning site preparation.

<u>Site Drainage Controls</u>: We recommend that initial site preparation involve intercepting and diverting any potential sources of surface or near-surface water within the construction zones. Because the selection of an appropriate drainage system will depend on the water quantity, season, weather conditions, construction sequence, and methods used by the contractor, final decisions regarding drainage systems are best made in the field at the time of construction. All drainage and/or water diversion performed for the site should be in accordance with the Clean Water Act and applicable Storm Water Pollution Prevention Plan.

Swales and natural hillside drainage proposed to receive engineered fill may require the installation of canyon style drains (similar to Figure C-1, Appendix C) to mitigate for potential subsurface water. Close coordination between the design professionals for placement and discharge of canyon style drains should be performed. During development of the grading plans, we can provide the locations for these types of drains.

Dust Control: Dust control provisions should be provided for as required by the local jurisdiction's grading ordinance (i.e. water truck or other adequate water supply during grading).

Clearing and Stripping: Clearing and stripping operations should include the removal of all organic laden materials including trees, bushes, root balls, root systems, and any soft or loose soil generated by the removal operations. Surface grass stripping operations are necessary based upon our recent observations. Short or mowed dry grasses may be pulverized and lost within fill materials provided no concentrated pockets of organics result. It is the responsibility of the grading contractor to remove excess organics from the fill materials. **No more than 2 percent of organic material, by weight, should be allowed within the fill materials at any given location.**

General site clearing should also include removal of any loose or saturated materials within the proposed structural improvement and pavement areas. A representative of our firm should be present during site clearing operations to identify the location and depth of potential fills not disclosed by this report, to observe removal of deleterious materials, and to identify any existing site conditions which may require mitigation or further recommendations prior to site development.

Addressing Loose/Soft Soils: Following general site clearing, all loose/soft native soils should be overexcavated down to firm native materials. Any depressions extending below final grade resulting from the removal of fill materials or other deleterious materials should be properly prepared as discussed below and backfilled with engineered fill.

Expansive Clay Mitigation: Expansive clays, if encountered, should be mixed thoroughly with less expansive on site materials (silts, sands, and gravels) and should not be present in concentration within 5 feet of the building envelope, either vertically or laterally. Proper disposition of clays on site should be observed and documented by a representative of Youngdahl Consulting Group, Inc.

Exposed Grade Compaction: Exposed soil grades following initial site preparation activities and overexcavation operations should be scarified to a minimum depth of 8 inches and compacted to the requirements for engineered fill. Prior to placing fill, the exposed subgrades should be in a firm and unyielding state. Any localized zones of soft or pumping soils observed within a subgrade should either be scarified and recompacted or be overexcavated and replaced with engineered fill as detailed in the engineered fill section below.

Excavation Characteristics

The exploratory test pits were excavated using a John Deere 410J backhoe equipped with an 18 inch wide bucket. The degree of difficulty encountered in excavating our test pits is an indication of the effort that will be required for excavation during construction. Site soils were observed to be approximately ½ to 4 feet thick overlying the bedrock horizon.

Refraction Seismic Survey

To supplement the information regarding the excavation characteristics of the bedrock materials underlying the site, a refraction seismic survey was performed within the areas of anticipated deep cuts/excavations.

Seismic lines (see attached Refraction Seismic Investigation prepared by Gasch Geophysical Services, Inc., Appendix D) and test pit excavations performed at the project site gives an indication of the amount of effort that may be required for excavation during construction. A total of 5 seismic lines were conducted along the higher elevation locations where cut excavations will likely be performed. A standard impact hammer/plate with trip sensor was employed to generate seismic signals along the proposed deep cut/excavation area.

The study compiled in the attached report was conducted with state-of-the-technology geophysical equipment operated by an experienced geophysical team, familiar with the local geology and the typical engineering characteristics of the local metavolcanic bedrock. While every attempt has been made to provide accuracy and reliability to the findings submitted, readers and users of the attached report must keep in mind that the profiles and estimated depths to non-rippable rock are professional interpretations based on experience and familiarity with the equipment and software used. As such, site-specific conditions may be encountered on a localized basis that differ from the professional interpretations expressed in this engineering evaluation and the geophysicists' attached seismic refraction rippability report.

The refraction seismic investigation indicated that the depth to marginally rippable to non-rippable materials (with a Caterpillar D10R) varies from about 0 to 25 feet below site grades. Reference should be made to the attached refraction seismic investigation for additional detail regarding site rippability.

Where hard rock cuts in fractured rock are proposed, the orientation and direction of ripping will likely play a large role in the rippability of the material. When hard rock is encountered, we should be contacted to provide additional recommendations prior to performing an alternative such as blasting.

Utility trenches will likely encounter hard rock excavation conditions especially in deeper cut areas. Utility contractors should be prepared to use special rock trenching equipment such as large excavators (Komatsu PC400 or CAT 345 or equivalent). Blasting to achieve utility line grades, especially in planned cut areas, cannot be precluded. Water inflow into any excavation approaching the hard rock surface is likely to be experienced in all but the driest summer and fall months. Pre-ripping during mass grading may be beneficial and should be considered with the Geotechnical Engineer prior to, or during mass grading.

Soil Moisture Considerations
The near-surface soils may become partially or completely saturated during the rainy season. Grading operations during this time period may be difficult since compaction efforts may be hampered by saturated materials. Therefore, we suggest that consideration be given to the seasonal limitations and costs of winter grading operations on the site. Special attention should be given regarding the drainage of the project site.

If the project is expected to work through the wet season, the contractor should install appropriate temporary drainage systems at the construction site and should minimize traffic over exposed subgrades due to the moisture-sensitive nature of the on-site soils. During wet weather operations, the soil should be graded to drain and should be sealed by rubber tire rolling to minimize water infiltration.

Compaction Equipment
Due to the significant quantity of rock materials that will comprise a majority of the fills on the project site, a Caterpillar 825 steel-wheel compactor or approved equivalent should be employed as a minimum to facilitate breakdown of oversize bedrock materials and generation of soil fines during the fill placement process. If the quantity of rock fragments in the fills preclude traditional compaction testing, then the proposed fills should be compacted using method specifications as indicated in the Engineered Fill Criteria section below.

In focused or isolated areas where significant rock quantities will not be present, we anticipate that a large vibratory padded drum compactor or approved equivalent will be capable of achieving the compaction requirements for engineered fill provided the soil is placed and compacted within 0 to 3 percent over the optimum moisture content as determined by the ASTM D1557 test method and in lifts not greater than 12 inches in uncompacted thickness. The use of handheld equipment such as jumping jack or plate vibration compactors may require thinner lifts of 6 inches or less to achieve the desired relative compaction parameters.

Engineered Fill Criteria
All materials placed as fills on the site should be placed as "Engineered Fill" which is observed, tested, and compacted as described in the following paragraphs.

Suitability of Onsite Materials: We anticipate that a large amount of onsite soils will be generated during mass grading operations. We expect that soil generated from excavations on the site, excluding deleterious material, may be used as engineered fill provided the material does not exceed the maximum size specifications listed below.

Rock fragments or boulders exceeding 24 inches in maximum dimension should not be placed within the upper five feet of site grades or utility corridors. The upper two feet of the site grades and within the zone of proposed underground facilities should consist of predominantly rocks and rock fragments less than 12 inches in maximum dimension. Boulders over 24 inches in maximum dimension should be placed within the deeper portions of fill embankments below a depth of 5 feet and a minimum of 5 feet from the finish slope face. The individual boulders should be spaced such that compaction of finer rock and soil materials between the boulders can be achieved with the equipment being used for compaction. Materials placed between the boulders should consist of predominantly soil and rock less than 12 inches in maximum dimension. The soil/rock mixture should be thoroughly mixed and placed between the boulders so as to preclude nesting or the formation of voids. Should insufficient deep fill areas exist for oversize rock disposal, the contractor should either dispose of the excess materials to an offsite location or mechanically reduce the rocks to less than 12 inches.

Import Materials: If imported fill material is needed for this project, import material should be approved by our firm prior to transporting it to the project. It is preferable that import material meet the following requirements:

1. Plasticity index not to exceed 12;
2. "R"-value of equal to or greater than 20;
3. An angle of friction equal to or greater than 32;
4. Should not contain rocks larger than 6 inches in diameter;
5. Not more than 15 percent passing through the No. 200 sieve.

If these requirements are not met, additional testing and evaluation may be necessary to determine the appropriate design parameters for foundations, pavement, and other improvements.

Fill Placement and Compaction: All areas proposed to receive fill should be scarified to a minimum depth of 8 inches, moisture conditioned as necessary, and compacted to at least 90 percent of the maximum dry density based on the ASTM D1557 test method. The fill should be placed in thin horizontal lifts not to exceed 12 inches in uncompacted thickness. The fill should be moisture conditioned as necessary and compacted to a relative compaction of not less than 90 percent based on the ASTM D1557 test method. The upper 8 inches of fills placed under proposed pavement areas should be compacted to a relative compaction of not less than 95 percent based on the ASTM D1557 test method.

To mitigate the potential for deep fill settlement, all fills placed deeper than 10 feet from finished grade should be compacted to a minimum of 95 percent relative compaction. The fills should be placed at a minimum of two percent over optimum moisture content.

Fill soil compaction should be evaluated by means of in-place density tests performed during fill placement so that adequacy of soil compaction efforts may be evaluated as earthwork progresses, or by method specification if the quantity of rock fragments in the fills preclude traditional compaction testing. This will likely include the excavation of test pits within the fill materials to observe and document that a uniform over-optimum moisture condition, and absence of large and/or concentrated voids has been achieved prior to additional fill placement.

Method Specification: Soils exceeding 30 percent rock by mass may be considered non-testable by conventional methods. The materials may be placed as engineered fill if placed in accordance with the following method specification during full time observation by a representative of our firm.

Soils should be moisture conditioned and compacted in place by a minimum of four completely covering passes with a Caterpillar 825, or approved equivalent. The compactor's last two passes should be at 90 degrees to the initial passes. In areas where 95 percent relative compaction is designated, an additional two passes should be applied in each direction, with three completely covering passes made at 90 degrees to the initial three passes. Engineered fill should be constructed in lifts not exceeding 12 inches in uncompacted thickness, moisture conditioned and compacted in accordance with the above specification. Additional passes as deemed necessary during fill placement to achieve the desired condition based upon field conditions may be recommended.

Slope Configuration and Grading

Generally a cut slope orientation of 2H:1V is considered stable with the material types encountered on the site. A fill slope constructed at the same orientation is considered stable if compacted to the engineered fill recommendations as stated in the recommendations section of this report. All slopes should have appropriate drainage and vegetation measures to minimize erosion of slope soils.

Surficial stability of steeper cut slopes may be achievable due to the geology of the cut materials. Steepening of slopes greater than 2H:1V will require design and observation during the proposed cut. Any slope excavations proposed to be greater than 10 feet in maximum height should be evaluated during and prior to completion of site grading.

Placement of Fills on Slopes: Placement of fill material on natural slopes should be stabilized by means of keyways and benches. Where the slope of the original ground equals or exceeds 5H:1V, a keyway should be constructed at the base of the fill. The keyway should consist of a trench excavated to a depth of at least two feet into firm, competent materials. The keyway trench should be at least ten feet wide or as designated by our firm based on the conditions at the time of construction. Benches should be cut into the original slope as the filling operation proceeds. Each bench should consist of a level surface excavated at least six feet horizontally into firm soils or four feet horizontally into rock. The rise between successive benches should not exceed 36 inches. The need for subdrainage should be evaluated at the time of construction. Refer to Figure C-2 in Appendix C for typical keyway and bench construction.

Slope Face Compaction: All slope fills should be laterally overbuilt and cut back such that the required compaction is achieved at the proposed finish slope face. As a less preferable alternative, the slope face could be track walked or compacted with a wheel. If this second alternative is used, additional slope maintenance may be necessary.

Slope Drainage: Surface drainage should not be allowed to flow uncontrolled over any slope face. Adequate surface drainage control should be designed by the project civil engineer in accordance with the latest applicable edition of the CBC. All slopes should have appropriate drainage and vegetation measures to minimize erosion of slope soils.

Underground Improvements

Trench Excavation: Trenches or excavations in soil should be shored or sloped back in accordance with current OSHA regulations prior to persons entering them. Where clay rind in combination with moist conditions is encountered in fractured bedrock, the project engineering geologist should be consulted for appropriate mitigation measures. The potential use of a shield to protect workers cannot be precluded. Refer to the Excavation Characteristics section of Site Grading and Improvements of this report for anticipated excavation conditions.

Backfill Materials: Backfill materials for utilities should conform to the local jurisdiction's requirements. It should be realized that permeable backfill materials will likely carry water at some time in the future.

When backfilling within structural footprints, compacted low permeability materials are recommended to be used a minimum of 5 feet beyond the structural footprint to minimize moisture intrusion. If the materials are too rocky, they may need to be screened prior to backfill in order to limit pipe damage. If a permeable material is used as backfill within this zone, subdrainage mitigation may be required. In addition, if the structure is oriented below the roadway and associated utilities, grout cutoffs and/or plug and drains around all utility penetrations are recommended to keep moisture out from underneath the structure.

A common problem occurs on sites graded with large equipment and rocky fill materials where the excavated spoils from the lot utilities are too rocky to place as engineered fill back in the trench with the common compaction practices employed by the subcontractors installing these utilities. We recommend that where excavated soils are too rocky to place and compact to a tight condition with low void space, these materials be replaced with a proper import material for compaction.

Backfill Compaction: All backfill, placed after the underground facilities have been installed, including lot wet/dry utilities and lateral connections, should be compacted a minimum of 90 percent relative compaction. Compaction should be accomplished using lifts which do not exceed 12 inches. However, thickness of the lifts should be determined by the contractor. If the contractor can achieve the required compaction using thicker lifts, the method may be judged acceptable based on field verification by a representative of our firm using standard density testing procedures. Lightweight compaction equipment may require thinner lifts to achieve the required densities.

Drainage Considerations: In developments with the potential for a perched groundwater condition in rocky fills or fractured rock exposures in cuts, underground utilities can become collection points for subsurface water. Due to this condition, we recommend plug and drains within the utility trenches (Figure C-3, Appendix C) to collect and convey water to the storm drain system or other approved outlet. Temporary dewatering measures may be necessary and could include the installation of submersible pumps and/or point wells. ***As the observed site conditions dictate, representatives from our firm, the contractor, El Dorado County Department of Transportation and the civil engineer should coordinate the locations of plug and drains.***

5.0 DESIGN RECOMMENDATIONS

Seismic Criteria

Based on the 2010 California Building Code, Chapter 16, and our site investigation findings, the following seismic parameters are recommended from a geotechnical perspective for structural design. The final choice of design parameters, however, remains the purview of the project structural engineer.

Table 4: Seismic Design Parameters

CBC Chapter 16	Seismic Parameter	Recommended Value
Table No. 1613.5.2	Site Class	C
Figure No. 1613.5(3)*	Short-Period MCE at 0.2s, S_S	0.385g
Figure No. 1613.5(4)*	1.0s Period MCE, S_1	0.193g
Table No. 1613.5.3(1)**	Site Coefficient, F_a	1.20
Table No. 1613.5.3(2)**	Site Coefficient, F_v	1.61
Equation 16-36	Adjusted MCE Spectral Response Parameters, $S_{MS} = F_aS_s$	0.462
Equation 16-37	Adjusted MCE Spectral Response Parameters, $S_{M1} = F_vS_1$	0.309
Equation 16-38	Design Spectral Acceleration Parameters, $S_{DS} = ⅔S_{MS}$	0.308
Equation 16-39	Design Spectral Acceleration Parameters, $S_{D1} = ⅔S_{M1}$	0.206
Table 1613.5.6(1)	Seismic Design Category (Short Period), Occupancy I to III	B
Table 1613.5.6(1)	Seismic Design Category (Short Period), Occupancy IV	C
Table 1613.5.6(2)	Seismic Design Category (1-Second Period), Occupancy I to III	D
Table 1613.5.6(2)	Seismic Design Category (1-Second Period), Occupancy IV	D

* Values from Figures 1613.5(3)/(4) are derived from the National Earthquake Hazards Reduction Program (NEHRP) for Site Class B soil profiles.
** Values from Tables 1613.3(1)/(2) are adjustments to account for the Site Class (Project Specific) provided in Table 1613.5.2.

Shallow Conventional Foundations

We offer the following comments and recommendations for purposes of design and construction of shallow continuous and/or isolated pad foundations. The provided minimums do not constitute a structural design of foundations which should be performed by the structural engineer. Our firm should be afforded the opportunity to review the project grading and foundation plans to confirm the applicability of the recommendations provided below. Modifications to these recommendations may be made at the time of our review. In addition to the provided recommendations, foundation design and construction should conform to applicable sections of the 2010 California Building Code.

<u>Continuous or Strip Footing Bearing Capacities</u>: An allowable dead plus live load bearing pressure of based on Table 5 below may be used for design of continuous or strip footings based on firm native soils or engineered fills. The allowable pressures are for support of dead plus live loads and may be increased by 1/3 for short-term wind and seismic loads. The bearing capacities and bearing capacity equation were derived from the bearing capacity methods developed by Meyerhoff (1963). A factor of safety of 3 was incorporated into the values provided. Minimum anticipated foundation dimensions for buildings structures proposed to be located at the project site are provided in the following table.

Table 5: Minimum Foundation Sizes and Bearing Capacities

Structure Type	Number of Supported Floors	Foundation Size (WxD)	Bearing Capacity (psf)	
			(Soil)	(Bedrock)
Single Family Residential	1 (1-2 Story SOG)	12x12 inches	1,500	4,000
	2 (3 Story SOG)	12x18 inches	2,000	4,000

Pad Footing Bearing Capacities: An allowable dead plus live load bearing pressure of 1,500 psf may be used for design of square pad footings based a minimum of 12 inches into firm native soils or engineered fills. An additional 100 psf and 75 psf may be added to the bearing capacity for each additional foot of width or depth, respectively above a minimum footing dimension of 24 inches square embedded 12 inches below the lowest adjacent soil grade. The additional capacity may be utilized to a maximum of 4,000 psf. An allowable dead plus live load bearing capacity of 4,000 psf may be used for bedrock conditions with a footing configuration of 24 inches square and 12 inches below the lowest adjacent bedrock grade. An additional 500 psf per foot of width or depth to a maximum of 6,000 psf may be applied for alternative footing configurations in bedrock. The above allowable pressures are for support of dead plus live loads and may be increased by 1/3 for short-term wind and seismic loads. The bearing capacities and bearing capacity equation were derived from the bearing capacity methods developed by Vesic (1973). A factor of safety of 3 was incorporated into the values provided.

Foundation Settlement: A total settlement of less than 1 inch is anticipated; a differential settlement of ½ of the total is anticipated where foundations are bearing on like materials. This settlement is based upon the assumption that foundation loads will be typical of wood framed construction up to 3 supported floors in height with foundations sized in accordance with the provided allowable bearing capacities.

Lateral Pressures: Lateral forces on structures may be resisted by passive pressure acting against the sides of shallow footings and/or friction between the soil and the bottom of the footing. For resistance to lateral loads, a friction factor of 0.35 may be utilized for sliding resistance at the base of spread footings in firm native materials or engineered fill and 0.45 for weathered rock. A passive resistance of 350 pcf equivalent fluid weight may be used against the side of shallow footings in firm native soil or engineered fill and 450 pcf for weathered bedrock conditions. If friction and passive pressures are combined, the lesser value should be reduced by 50 percent.

Footing Configuration: Foundation reinforcement should be provided by the structural engineer. The reinforcement schedule should account for typical construction issues such as load consideration, concrete cracking, and the presence of isolated irregularities. At a minimum, we recommend that continuous footing foundations for single family residences be reinforced with two No. 4 reinforcing bars, one located near the bottom of the footing and one near the top of the stem wall.

Where foundations are constructed within a cut-fill transition, soil to rock interface, or over minor surface irregularities (i.e. point load conditions within resistant bedrock), as a consideration to span these localized differential irregularities, we suggest that structural footing reinforcing steel be doubled top and bottom (minimum, four #4 reinforcing bars, two each top and bottom) extending a minimum of 10 feet continuous length on both sides of the transition/irregularity.

All footings should be founded below an imaginary 2H:1V plane projected up from the bottoms of adjacent footings and/or parallel utility trenches, or to a depth that achieves a minimum horizontal clearance of 6 feet from the outside toe of the footings to the slope face, whichever requires a deeper excavation.

Subgrade Conditions: Footings should never be cast atop soft, loose, organic, slough, debris, nor atop subgrades covered by ice or standing water. A representative of our firm should be retained to observe all subgrades during footing excavations and prior to concrete placement so that a determination as to the adequacy of subgrade preparation can be made.

Shallow Footing / Stemwall Backfill: All footing/stemwall backfill soil should be compacted to at least 90 percent of the maximum dry density (based on ASTM D1557).

Differential Support Conditions

Differential support conditions may be a concern where fills are placed and compacted for construction of a building pad and the proposed building will span from a native to deep fill condition (i.e. fills greater than 10 feet). In order to mitigate the potential for differential settlement, overexcavation of the cut portion of the building pad, deepening of the foundations or adjustment of compaction requirements may be recommended. We should be afforded the opportunity to review the construction plans in order to develop site specific recommendations regarding differential conditions.

Retaining Walls

Our design recommendations and comments regarding retaining walls for the project site are discussed below.

Foundation Design Parameters: An allowable dead plus live load bearing pressure of 1,500 psf may be used for design of retaining wall footings based a minimum of 12 inches into firm native soils or engineered fills. The allowable bearing capacity may be increased to 4,000 psf for wall footings based a minimum of 12 inches into bedrock.

For resistance to lateral loads, a friction factor of 0.35 may be utilized for sliding resistance at the base of wall footings in firm native materials or engineered fill and 0.45 for weathered rock. A passive resistance of 350 pcf equivalent fluid weight may be used against the side of wall footings in firm native soil or engineered fill and 450 pcf for weathered bedrock conditions. If friction and passive pressures are combined, the lesser value should be reduced by 50 percent.

Retaining Wall Lateral Pressures: Based on our observations and testing, the retaining wall should be designed to resist lateral pressure exerted from a soil media having an equivalent fluid weight as follows.

Table 6: Retaining Wall Pressures

Wall Type	Wall Slope Configuration	Equivalent Fluid Weight (pcf)	Surcharge Load (psf)*	Lateral Pressure Coefficient	Earthquake Loading (plf)***
Free Cantilever	Flat	40	per structural	0.32	$16H^2$ Applied 0.6H above the base of the wall
	2H:1V	60	per structural	0.48	
Restrained**	Flat	60	per structural	0.48	

* The surcharge loads should be applied as uniform loads over the full height of the walls as follows: Surcharge Load (psf) = (q) (K), where q = surcharge in psf, and K = coefficient of lateral pressure. Final design is the purview of the project structural engineer.

** Restrained conditions shall be defined as walls which are structurally connected to prevent flexible yielding, or rigid wall configurations (i.e. walls with numerous turning points) which prevent the yielding necessary to reduce the driving pressures from an at-rest state to an active state.

*** Section 1803.5.12 of the 2010 California Building Code states that a determination of lateral pressures on basement and retaining walls due to earthquake loading shall be provided for structures to be designed in Seismic Design Categories D, E or F (Load value derived from Wood (1973) and modified by Whitman (1991)).

Mechanically Stabilized Earth (MSE) or Rockery Walls: If mechanically stabilized earth walls such as Keystone, Anchor, or Allen Block walls, or rockery walls are utilized, the following soil parameters would be applicable for design within on-site, native materials:

Table 7: MSE Wall Design Parameters

Internal Angle of Friction	Cohesion	Optimum Dry Unit Weight	Optimum Moisture
32°	0 psf	125 psf	13 %

Site Wall Drainage: The above criteria are based on fully drained conditions as detailed in the attached Figure C-4, Appendix C. For these conditions, we recommend that a blanket of filter material be placed behind all proposed walls. The blanket of filter material should be a minimum of 12 inches thick and should extend from the bottom of the wall to within 12 inches of the ground surface. The filter material should conform to Class One, Type B permeable material as specified in Section 68 of the California Department of Transportation Standard Specifications, current edition. A clean ⅜ inch angular gravel or ¾ inch crushed rock is also acceptable, provided filter fabric is used to separate the open graded gravel/rock from the surrounding soils. The top 12 inches of wall backfill should consist of a compacted soil cap. A filter fabric should be placed on top of the gravel filter material to separate it from the soil cap. A 4 inch diameter drain pipe should be installed near the bottom of the filter blanket with perforations facing down. The drainpipe should be underlain by at least 4 inches of filter-type material. An adequate gradient should be provided along the top of the foundation to discharge water that collects behind the retaining wall to a controlled discharge system.

The configuration of a long retaining wall generally does not allow for a positive drainage gradient within the perforated drain pipe behind the wall since the wall footing is generally flat with no gradient for drainage. Where this condition is present, to maintain a positive drainage behind the walls, we recommend that the wall drains be provided with a discharge to an appropriate non-erosive outlet a maximum of 50 feet on center. **In addition, if the wall drain outlets are temporarily stubbed out in front of the walls for future connection during home construction, it is imperative that the outlets be routed into the tight pipe area drainage system and not buried and rendered ineffective.**

Slab-on-Grade Construction

It is our opinion that soil-supported slab-on-grade floors could be used for the main floors of the structures, contingent on proper subgrade preparation. Often the geotechnical issues regarding the use of slab-on-grade floors include proper soil support and subgrade preparation, proper transfer of loads through the slab underlayment materials to the subgrade soils, and the anticipated presence or absence of moisture at or above the subgrade level. We offer the following comments and recommendations concerning support of slab-on-grade floors. The slab design (concrete mix, reinforcement, joint spacing, moisture protection, and underlayment materials) is the purview of the project Structural Engineer.

Slab Subgrade Preparation: All subgrades proposed to support slab-on-grade floors should be prepared and compacted to the requirements of engineered fill as discussed in the Site Grading and Improvements section of this report.

Slab Underlayment: As a minimum for slab support conditions, the slab should be underlain by a minimum 4 inch crushed rock layer and covered by a minimum 10-mil thick moisture retarding plastic membrane. An optional 1 inch blotter sand layer above the plastic membrane is sometimes used to aid in curing of the concrete. The blotter layer can become a reservoir for excessive moisture if inclement weather occurs prior to pouring the slab, excessive water collects in it from the concrete pour, or an external source of water enters above or bypasses the membrane. The membrane may only be functional when it is above the vapor sources. The bottom of the crushed rock layer should be above the exterior grade to act as a capillary break and not a reservoir, unless it is provided with an underdrain system. The slab design and underlayment should be in accordance with ASTM E1643 and E1745.

If the blotter sand layer is omitted (as may be required if slab design and construction is to be performed according to the 2010 Green Building Code), special wet curing procedures will be necessary. In this case, development of appropriate slab mix design and curing procedures remains the purview of the project structural engineer.

Slab Moisture Protection: Due to the potential for landscape to be present directly adjacent to the slab edge/foundation or for drainage to be altered following our involvement with the project, varying levels of moisture below, at, or above the pad subgrade level should be anticipated. The slab designer should include the potential for moisture vapor transmission when designing the slab. Our experience has shown that vapor transmission through concrete is controlled through slab thickness as well as proper concrete mix design.

It should be noted that placement of the recommended plastic membrane, proper mix design, and proper slab underlayment and detailing per ASTM E1643 and E1745 will not provide a waterproof condition. If a waterproof condition is desired, we recommend that a waterproofing expert be consulted for slab design.

Slab Thickness and Reinforcement: Geotechnical reports have historically provided minimums for slab thickness and reinforcement for general crack control. The concrete mix design and construction practices can additionally have a large impact on concrete crack control. All concrete should be anticipated to crack. As such, these minimums should not be considered to be stand alone items to address crack control, but are suggested to be considered in the slab design methodology.

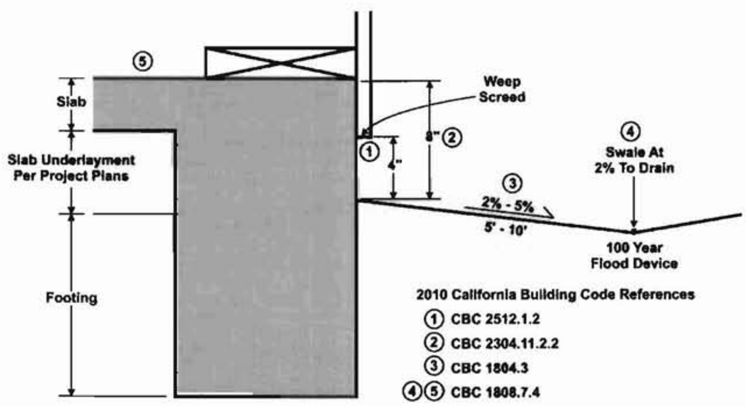
In order to help control the growth of cracks in interior concrete from becoming significant, we suggest the following minimums. Interior concrete slabs-on-grade not subject to heavy loads should be a minimum of 4 inches thick. A 4 inch thick slab should be reinforced. A minimum of No. 3 deformed reinforcing bars placed at 24 inches on center both ways, at the center of the structural section is suggested. Joint spacing should be provided by the structural engineer. Troweled joints recovered with paste during finishing or "wet sawn" joints should be considered every 10 feet on center. Expansion joint felt should be provided to separate floating slabs from foundations and at least at every third joint. Cracks will tend to occur at recurrent corners, curved or triangular areas and at points of fixity. Trim bars can be utilized at right angle to the predicted crack extending 40 bar diameters past the predicted crack on each side.

Vertical Deflections: Soil-supported slab-on-grade floors can deflect downward when vertical loads are applied, due to elastic compression of the subgrade. For design of concrete floors, a modulus of subgrade reaction of k = 150 psi per inch would be applicable for native soils and engineered fills.

Exterior Flatwork: Exterior concrete flatwork should be underlain by a minimum 4 inch thick rock cushion (i.e. crushed rock or compacted aggregate base).

If exterior flatwork concrete is against the floor slab edge without a moisture separator it may transfer moisture to the floor slab. Expansion joint felt should be provided to separate exterior flatwork from foundations and at least at every third joint. Contraction / groove joints should be provided to a depth of at least 1/4 of the slab thickness and at a spacing of less than 30 times the slab thickness for unreinforced flatwork, dividing the slab into nearly square sections. Cracks will tend to occur at recurrent corners, curved or triangular areas and at points of fixity. Trim bars can be utilized at right angle to the predicted crack extending 40 bar diameters past the predicted crack on each side.

Drainage Adjacent to Slabs: All grades should provide rapid removal of surface water runoff; ponding water should not be allowed on building pads or adjacent to foundations or other structural improvements (during and following construction). All soils placed against foundations during finish grading should be compacted to minimize water infiltration. Finish and landscape grading should include positive drainage away from all foundations. Section 1808.7.4 of the 2010 California Building Code (CBC) states that for graded soil sites, the top of any exterior foundation shall extend above the elevation of the street gutter at the point of discharge or the inlet of an approved drainage device a minimum of 12 inches plus 2 percent. If overland flow is not achieved adjacent to buildings, the drainage device should be designed to accept flows from a 100 year event. Grades directly adjacent to foundations should be no closer than 8 inches from the top of the slab (CBC 2304.11.2.2), and weep screeds are to be placed a minimum of 4 inches clear of soil grades and 2 inches clear of concrete or other hard surfacing (CBC 2512.1.2). From this point, surface grades should slope a minimum of 2 percent away from all foundations for at least 5 feet but preferably 10 feet, and then 2 percent along a drainage swale to the outlet (CBC 1804.3). Downspouts should be tight piped via an area drain network and discharged to an appropriate non-erosive outlet away from all foundations.



Typical 2010 California Building Code Drainage Requirements

The above referenced elements pertaining to drainage of the proposed structures is provided as general acknowledgement of the California Building Code requirements, restated and graphically illustrated for ease of understanding. Surface drainage design is the purview of the Project Architect/Civil Engineer. Review of drainage design and implementation adjacent to the building envelopes is recommended as performance of these improvements is crucial to the performance of the foundation and construction of rigid improvements.

Asphalt Concrete Pavement Design

We understand that asphalt pavements will be used for the associated roadways. The following comments and recommendations are given for pavement design and construction purposes. All pavement construction and materials used should conform to applicable sections of the latest edition of the California Department of Transportation Standard Specifications.

Subgrade Compaction: After installation of any underground facilities, the upper 8 inches of subgrade soils under pavements sections should be compacted to a minimum relative compaction of 95 percent based on the ASTM D1557 test method at a moisture content near or above optimum. Aggregate bases should also be compacted to a minimum relative compaction of 95 percent based on the aforementioned test method.

Subgrade Stability: All subgrades and aggregate base should be proof-rolled with a full water truck or equivalent immediately before paving, in order to evaluate their condition. If unstable subgrade conditions are observed, these areas should be overexcavated down to firm materials and the resulting excavation backfilled with suitable materials for compaction (i.e. drier native soils or aggregate base). Areas displaying significant instability may require geotextile stabilization fabric within the overexcavated area, followed by placement of aggregate base. Final determination of any required overexcavation depth and stabilization fabric should be based on the conditions observed during subgrade preparation.

Design Criteria: Critical features that govern the durability of a pavement section include the stability of the subgrade; the presence or absence of moisture, free water, and organics; the fines content of the subgrade soils; the traffic volume; and the frequency of use by heavy vehicles. Soil conditions can be defined by a soil resistance value, or "R-Value", and traffic conditions can be defined by a Traffic Index (TI).

Design Values: The following table provides recommended pavement sections based on the R-Value test (CTM 301) performed on a bulk sample representative of the sandy SILTS materials expected to be exposed at subgrade, as well as our experience with similar materials in the area. An R-value of 7 was determined for the sandy SILTS tested; however, due to the significant quantity of rock fragments anticipated within the roadway materials (resulting from grading and trench excavations into the underlying bedrock materials), an R-Value of 20 was used in our design.

Design values provided are based upon properly drained subgrade conditions. Although the R-Value design to some degree accounts for wet soil conditions, proper surface and landscape drainage design is integral in performance of adjacent street sections with respect to stability and degradation of the asphalt. If clay soils are encountered and cannot be sufficiently blended with non-expansive soils, we should review pavement subgrades to determine the appropriateness of the provided sections, and provide additional pavement design recommendations as field conditions dictate. Even minor clay constituents will greatly reduce the design R-Value.

The recommended design thicknesses presented in the following table were calculated in accordance with the methods presented in the Sixth Edition of the California Department of Transportation Highway Design Manual. A varying range of traffic indices are provided for use by the project Civil Engineer for roadway design.

Table 8: Asphalt Pavement Section Recommendations

Design Traffic Indices	Alternative Pavement Sections (Inches)	
	Asphalt Concrete *	**Aggregate Base ****
4.5	2.5	7.0
	3.0	6.0
5.0	2.5	8.5
	3.0	7.5
5.5	3.0	9.5
	3.5	8.0
6.0	3.0	10.5
	3.5	9.5
6.5	3.5	11.5
	4.0	10.5
7.0	4.0	12.0
	4.5	11.0
8.0	4.5	14.5
	5.0	13.5
9.0	5.5	16.0
	6.0	15.0
10.0	6.0	18.5
	7.0	17.0

* Asphalt Concrete: must meet specifications for Caltrans Type B Asphalt Concrete
** Aggregate Base: must meet specifications for Caltrans Class II Aggregate Base (R-Value = minimum 78)

Due to the redistribution of materials that occurs during mass grading operations, we should review pavement subgrades to determine the appropriateness of the provided sections.

Drainage Considerations

In order to maintain the engineering strength characteristics of the soil presented for use in this Geotechnical Engineering Study, maintenance of the building pads will need to be performed. This maintenance generally includes, but is not limited to, proper drainage and control of surface and subsurface water which could affect structural support and fill integrity. A difficulty exists in determining which areas are prone to the negative impacts resulting from high moisture conditions due to the diverse nature of potential sources of water; some of which are outlined in the paragraph below. We suggest that measures be installed to minimize exposure to the adverse effects of moisture, but this will not guarantee that excessive moisture conditions will not affect the structure.

Some of the diverse sources of moisture could include water from landscape irrigation, annual rainfall, offsite construction activities, runoff from impermeable surfaces, collected and channeled water, and water perched in the subsurface soils on the bedrock horizon or present in fractures in the weathered bedrock. Some of these sources can be controlled through drainage features installed either by the owner or contractor. Others may not become evident until they, or the effects of the presence of excessive moisture, are visually observed on the property.

Some measures that can be employed to minimize the buildup of moisture include, but are not limited to proper backfill materials and compaction of utility trenches within the footprint of the proposed residential and commercial structures; grout plugs at foundation penetrations; collection and channeling of drained water from impermeable surfaces (i.e. roofs, concrete or asphalt paved areas); installation of subdrain/cut-off drain provisions; utilization of low flow irrigation systems; education to the proposed homeowners of proper design and maintenance of landscaping and drainage facilities that they or their landscaper installs.

Building Pad Subdrain: It has been our experience that sites constructed below the street grade generally have an increased potential for moisture related issues related to water perched on the bedrock horizon and/or present in the fractures of the bedrock as well as moisture transmission through utility trenches. To mitigate for the potential of these issues, subdrains are typically constructed in addition to the drainage provisions provided in the 2010 CBC. Typical subdrain construction would include a 3 feet deep trench (or depth required to intercept the bottom of utility line trenches) constructed as detailed on Figure C-5. The water collected in the subdrain pipe would be directed to an appropriate non-erosive outlet.

As noted in the previous discussions, the moisture conditions may not manifest until after the home site is developed. As such, any recommendations for the subdrain orientation and location to mitigate the moisture conditions can be provided on an as requested and lot by lot basis as the conditions arise. It should also be noted that similar moisture conditions may arise within crawlspace grades (particularly when located below other potential moisture sources), and may warrant similar mitigation measures. Once again, any subdrain recommendations to mitigate the moisture conditions can be provided on an as requested and lot by lot basis as the conditions arise. We recommend that the developer notify future lot owners of this potential.

Median and Roadway Landscaping Drainage: In developments built on relatively poor draining soils (i.e. shallow bedrock), prolonged water seepage into pavement sections can result in softening of subgrade soils and subsequent pavement distress. In addition, where shallow bedrock conditions are present, water can become perched on the relatively impermeable soil horizon and eventually inundate utility trench backfill. The variable support condition between native soils and compacted trench backfill materials, coupled with prolonged water exposure can lead to subsidence of trench backfill materials if bridging of trench backfill occurs during placement or natural jetting of soils into voids around pipes occurs. Joint utility trenches are generally more susceptible to the jetting issues due to the quantity of pipe placed in the trench.

It is anticipated that heavy landscape watering could enter and pond within the street aggregate base section as it permeates through the aggregate base under the sidewalks and/or curbs. Prolonged seepage within the pavement section could cause distress to pavements in heavy traffic areas. Some measures that can be employed to minimize the saturation of the subgrade and aggregate base materials include, but are not limited to, construction of cut-off drains or moisture barriers alongside the roadway adjacent to the roadway interface, construction of subdrains within landscape medians and installation of plug and drain systems within utility trenches. Due to the elusive and discontinuous nature of drainage related issues, a risk based approach should be determined by the developer based on consultation and discussions with the design professionals and the amount of protection of facilities that the developer may want to provide against potential moisture related issues.

Post Construction: All drainage related issues may not become known until after construction and landscaping are complete. Therefore, some mitigation measures may be necessary following site development. Landscape watering is typically the largest source of water infiltration into the subgrade. Given the soil conditions on site, excessive or even normal landscape watering may contribute to groundwater levels rising, which could contribute to moisture related problems and/or cause distress to foundations and slabs, pavements, and underground utilities, as well as creating a nuisance where seepage occurs. In order to mitigate these conditions, additional subdrainage measures may be necessary. On foothill developments constructed with cut/fill pads on shallow bedrock conditions, seepage may not be apparent until post construction. In order to mitigate these conditions additional subdrainage measures may be necessary.

6.0 DESIGN REVIEW AND CONSTRUCTION MONITORING

The design plans and specifications should be reviewed and accepted by Youngdahl Consulting Group, Inc. prior to contract bidding. A review should be performed to determine whether the recommendations contained within this report are still applicable and/or are properly reflected and incorporated into the project plans and specifications.

Construction Monitoring

Construction monitoring is a continuation of the findings and recommendations provided in this report. It is essential that our representative be involved with all grading activities in order for us to provide supplemental recommendations as field conditions dictate. Youngdahl Consulting Group, Inc. should be notified at least two working days before site clearing or grading operations commence, and should observe the stripping of deleterious material, overexcavation of existing fills or loose/soft soils and provide consultation to the Grading Contractor in the field.

Low Impact Development Standards

Low Impact Development or LID standards have become a consideration for many projects in the region. LID standards are intended to address and mitigate urban storm water quality concerns. These methods include the use of Source Controls, Run-off Reduction and Treatment Controls. For the purpose of this report use of Run-off Reduction measures and some Treatment Controls may impact geotechnical recommendations for the project.

Youngdahl Consulting Group, Inc. did not perform any percolation or infiltration testing for the site as part of the Geotechnical Investigation. A review of soil survey and the data collected from test pits indicate that soils within the project are Hydrologic Soil Group D (low permeability). Based on this condition, use of infiltration type LID methods (infiltration trenches, dry wells, infiltration basins, permeable pavements, etc.) should not be considered without addressing applicable geotechnical considerations/implications. As such, use of any LID measure that would require infiltration of discharge water to surfaces adjacent to structures/pavement or include infiltration type measures should be reviewed by Youngdahl Consulting Group, Inc. during the design process.

Post Construction Monitoring

As described in Post Construction section of this report, all drainage related issues may not become known until after construction and landscaping are complete. Youngdahl Consulting Group, Inc. can provide consultation services upon request that relate to proper design and installation of drainage features during and following site development. In addition, if the development includes use of LID measures maintenance of those features in conformance with the standard of practice and documentation from the designer will be necessary. The impact from infiltration or run-off reduction measures to engineered structures and foundations may not become apparent until after construction. We recommend that all LID measures be inspected and maintained as documented by the designer and if adverse impacts are noted related to the structure or site that Youngdahl Consulting Group, Inc. be retained to review the LID measure and provide additional consulting and options.

7.0 LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. This report has been prepared for the exclusive use of Russell-Promontory, LLC for specific application to the El Dorado Springs 23 project. Youngdahl Consulting Group, Inc. has endeavored to comply with generally accepted geotechnical engineering practice common to the local area. Youngdahl Consulting Group, Inc. makes no other warranty, expressed or implied.

2. As of the present date, the findings of this report are valid for the property studied. With the passage of time, changes in the conditions of a property can occur whether they be due to natural processes or to the works of man on this or adjacent properties. Legislation or the broadening of knowledge may result in changes in applicable standards. Changes outside of our control may cause this report to be invalid, wholly or partially. Therefore, this report should not be relied upon after a period of three years without our review nor should it be used or is it applicable for any properties other than those studied.

3. Section 107.3.4.1 of the International Building Code and Appendix Chapter 1 of the 2010 California Building Code states that, in regard to the design professional in responsible charge, the building official shall be notified in writing by the owner if the registered design professional in responsible charge is changed or is unable to continue to perform the duties.

   WARNING: Do not apply any of this report's conclusions or recommendations if the nature, design, or location of the facilities is changed. If changes are contemplated, Youngdahl Consulting Group, Inc. must review them to assess their impact on this report's applicability. Also note that Youngdahl Consulting Group, Inc. is not responsible for any claims, damages, or liability associated with any other party's interpretation of this report's subsurface data or reuse of this report's subsurface data or engineering analyses without the express written authorization of Youngdahl Consulting Group, Inc.

4. The analyses and recommendations contained in this report are based on limited windows into the subsurface conditions and data obtained from subsurface exploration. The methods used indicate subsurface conditions only at the specific locations where samples were obtained, only at the time they were obtained, and only to the depths penetrated. Samples cannot be relied on to accurately reflect the strata variations that usually exist between sampling locations. Should any variations or undesirable conditions be encountered during the development of the site, Youngdahl Consulting Group, Inc., will provide supplemental recommendations as dictated by the field conditions.

5. The recommendations included in this report have been based in part on assumptions about strata variations that may be tested only during earthwork. Accordingly, these recommendations should not be applied in the field unless Youngdahl Consulting Group, Inc. is retained to perform construction observation and thereby provide a complete professional geotechnical engineering service through the observational method. Youngdahl Consulting Group, Inc. cannot assume responsibility or liability for the adequacy of its recommendations when they are used in the field without Youngdahl Consulting Group, Inc. being retained to observe construction. Unforeseen subsurface conditions containing soft native soils, loose or previously placed non-engineered fills should be a consideration while preparing for the grading of the property. It should be noted that it is the responsibility of the owner or his/her representative to notify Youngdahl Consulting Group, Inc., in writing, a minimum of 48 hours before any excavations commence at the site.

6. Our experience has shown that vapor transmission through concrete is controlled through proper concrete mix design. As such, proper control of moisture vapor transmission should

be considered in the design of the slab as provided by the project architect, structural or civil engineer. It should be noted that placement of the recommended plastic membrane, proper mix design, and proper slab underlayment and detailing per ASTM E1643 and E1745 will not provide a waterproof condition. If a waterproof condition is desired, we recommend that a waterproofing expert be consulted for slab design.

7. Following site development, additional water sources (i.e. landscape watering, downspouts) are generally present. The presence of low permeability materials can prohibit rapid dispersion of surface and subsurface water drainage. Utility trenches typically provide a conduit for water distribution. Provisions may be necessary to mitigate adverse effects of perched water conditions. Mitigation measures may include the construction of cut-off systems and/or plug and drain systems. Close coordination between the design professionals regarding drainage and subdrainage conditions may be warranted.

   Seepage may be observed emanating from the cut slopes following their excavation during the following rainy season or following development of the areas above the cut. Generally this seepage is not enough flow to be a stability issue to the cut slope, but may be an issue for the owner of the lot at the base of the cut from a surface drainage and standing water (damp spot) standpoint. This amount of water is generally collected easily with landscaping drainage, surface drainage at the toe of the slope, or subsurface toe drains. Recommendations may be provided at the time of observed seepage; however, we recommend that the developer of the property disclose this possibility to future owners.

Table 10: Checklist of Recommended Services

	Item Description	Recommended	Not Anticipated
1	Provide foundation design parameters	Included	
2	Review grading plans and specifications	✓	
3	Review foundation plans and specifications	✓	
4	Observe and provide recommendations regarding demolition	✓	
5	Observe and provide recommendations regarding site stripping	✓	
6	Observe and provide recommendations on moisture conditioning removal, and/or recompaction of unsuitable existing soils	✓	
7	Observe and provide recommendations on the installation of subdrain facilities	✓	
8	Observe and provide testing services on fill areas and/or imported fill materials	✓	
9	Review as-graded plans and provide additional foundation recommendations, if necessary	✓	
10	Observe and provide compaction tests on storm drains, water lines and utility trenches	✓	
11	Observe foundation excavations and provide supplemental recommendations, if necessary, prior to placing concrete	✓	
12	Observe and provide moisture conditioning recommendations for foundation areas and slab-on-grade areas prior to placing concrete		✓
13	Provide design parameters for retaining walls	Included	
14	Provide finish grading and drainage recommendations	Included	
15	Provide geologic observations and recommendations for keyway excavations and cut slopes during grading	✓	
16	Excavate and recompact all test pits within structural areas	✓	

APPENDIX A

Field Study

Vicinity Map
Site Plan
Logs of Exploratory Test Pits
Soil Classification Chart and Log Exploration

Introduction
The contents of this appendix shall be integrated with the geotechnical engineering study of which it is a part. They shall not be used in whole or in part as a sole source for information or recommendations regarding the subject site.

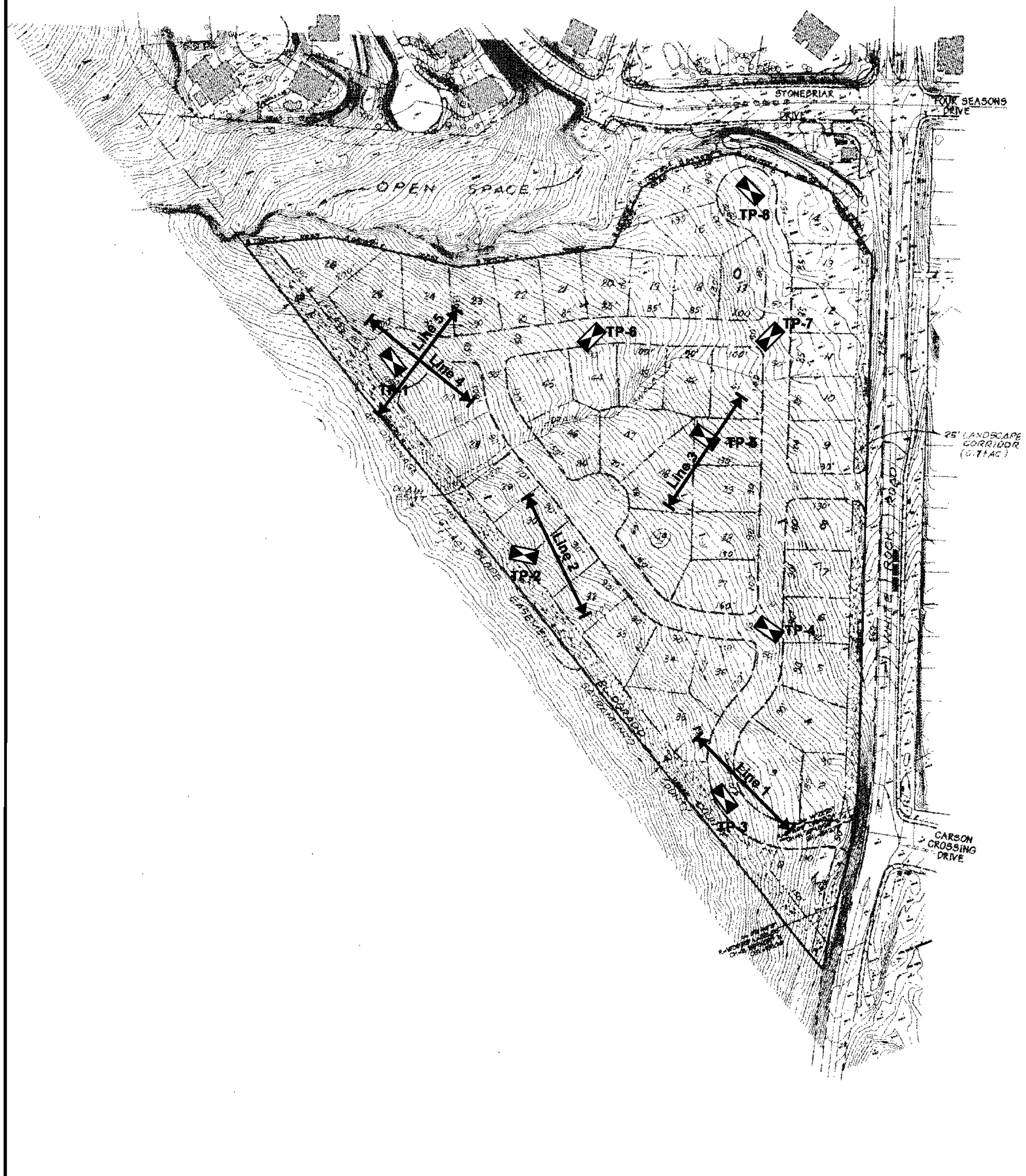
Our field study included a site reconnaissance by a Youngdahl Consulting Group, Inc. representative followed by a subsurface exploration program conducted on 11 October 2013, which included the excavation of 8 test pits under his direction at the approximate locations shown on Figure A-2, this Appendix. Excavation of the test pits was accomplished with a John Deere 410J rubber tire-mounted backhoe equipped with an 18 inch wide bucket. The bulk and bag samples collected from the test pits returned to our laboratory for further examination and testing.

The Exploratory Test Pit Logs describe the vertical sequence of soils and materials encountered in each test pit, based primarily on our field classifications and supported by our subsequent laboratory examination and testing. Where a soil contact was observed to be gradual, our logs indicate the average contact depth. Our logs also graphically indicate the sample type, sample number and approximate depth of each soil sample obtained from the test pits.

The soils encountered were logged during excavation and provide the basis for the "Logs of Test Pits", Figures A-3 through A-10, this Appendix. These logs show a graphic representation of the soil profile, the location and depths at which samples were collected.

BASE MAP REFERENCE: *Google Earth, Aerial Data 8/13/2013*

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING	Project No.: E13257.000	**VICINITY MAP**	**FIGURE**
	November 2013	**El Dorado Springs 23** El Dorado Hills, El Dorado County, California	**A-1**



TP-1 = Approximate Test Pit Locations

= Approximate Seismic Lines

0 100 200 400

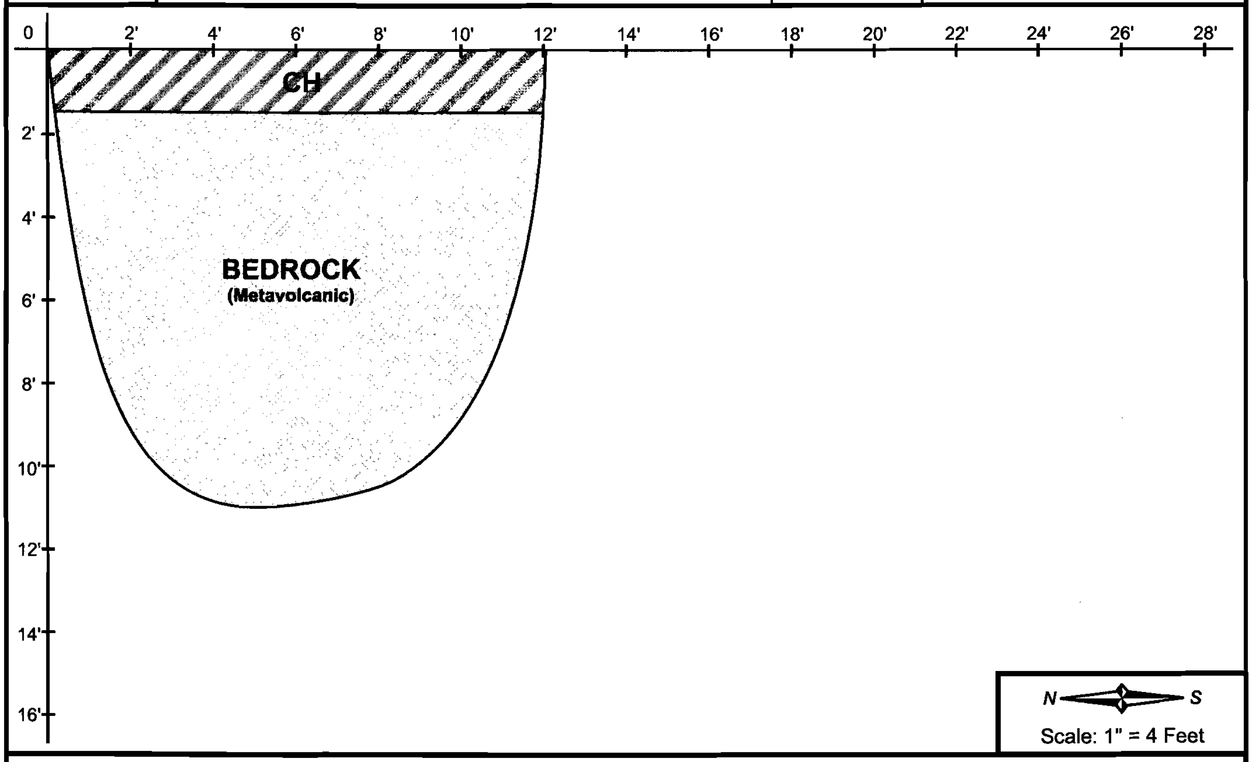
Approximate Scale: 1" = 200'

BASE MAP REFERENCE: *Topographic Survey, Preliminary Study Plan "C", El Dorado Springs, Carlton Engineering. Dated 2006*

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING	Project No.: E13257.000 **November 2013**	**SITE PLAN** **El Dorado Springs 23** El Dorado Hills, El Dorado County, California	**FIGURE** **A-2**

Logged By: **DHR**	Date: **11 October 2013**	Lat / Lon: **38.63666 / -121.08113**		Pit No. **TP-1**
Equipment: **John Deere 410 J Backhoe With 18" Bucket**		Pit Orientation: **N - S**	Elevation: **~ 616'**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0 - 1.5'	Red brown sandy **CLAY (CH)** with trace coarse gravel, stiff to very stiff, dry (8" long vertical dessication cracks)	**BULK 1** @ 1'	***Dense weeds***
@ 1.5' - 11'	Yellow brown metavolcanic **BEDROCK**, completely weathered, friable to weakly indurated, closely fractured, manganese and iron oxide staining, dry		**Joints** N55W, 55NE N45W, 85NE N10E, 35W
@ 7' - 8.5'	*Grades highly weathered, weakly indurated*		
@ 8.5' - 11'	*Grades moderately weathered, moderately indurated*		
	Test pit terminated at 11' (practical refusal-14" / 2 minutes) No free groundwater encountered No caving noted		

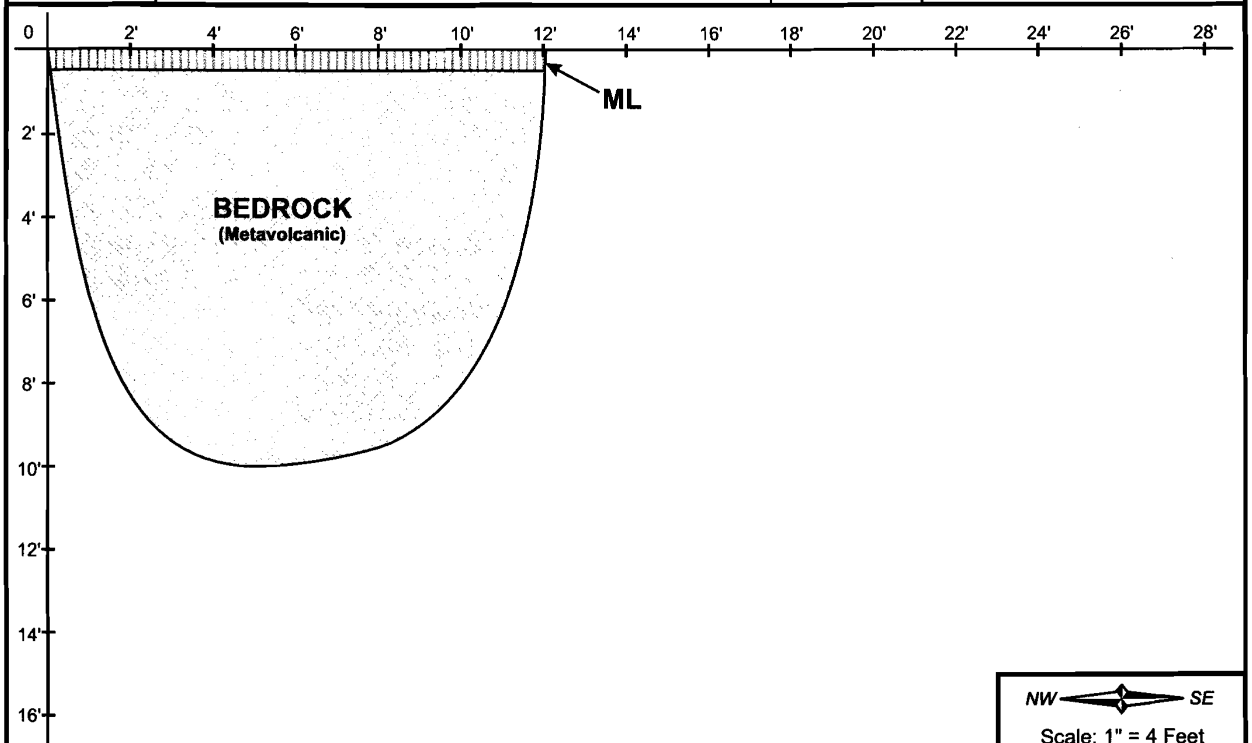


Note: The test pit log indicates subsurface conditions only at the specific location and time noted. Subsurface conditions, including groundwater levels, at other locations of the subject site may differ significantly from conditions which, in the opinion of Youngdahl Consulting Group, Inc., exist at the sampling locations, Note, too, that the passage of time may affect conditions at the sampling locations.

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING	Project No.: E13257.000 **November 2013**	**EXPLORATORY TEST PIT LOG** **El Dorado Springs 23** El Dorado Hills, El Dorado County, California	**FIGURE** **A-3**

Logged By: **DHR**	Date: **11 October 2013**	Lat / Lon: **38.63459 / -121.08097**		Pit No. **TP-2**
Equipment: **John Deere 410 J Backhoe With 18" Bucket**		Pit Orientation: **NW - SE**	Elevation: **~ 610'**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0 - 0.5'	Red brown sandy **SILT (ML)** with trace clay and few gravel, soft to medium stiff, dry		*Dense weeds*
@ 0.5' - 10'	Yellow brown metavolcanic **BEDROCK**, completely weathered, weakly indurated, closely fractured, manganese and iron oxide staining, 1/8" to 1/4" clay partings at fractures, dry		**Joints** N10E, 78W N60E, 46SE N35W, 70NE
@ 2' - 9'	*Grades highly weathered, weakly to moderately indurated, moist*		
@ 9' - 10'	*Grades moderately weathered, moderately indurated to indurated*		
	Test pit terminated at 10' (practical refusal- 1' / 2 minutes) No free groundwater encountered No caving noted		

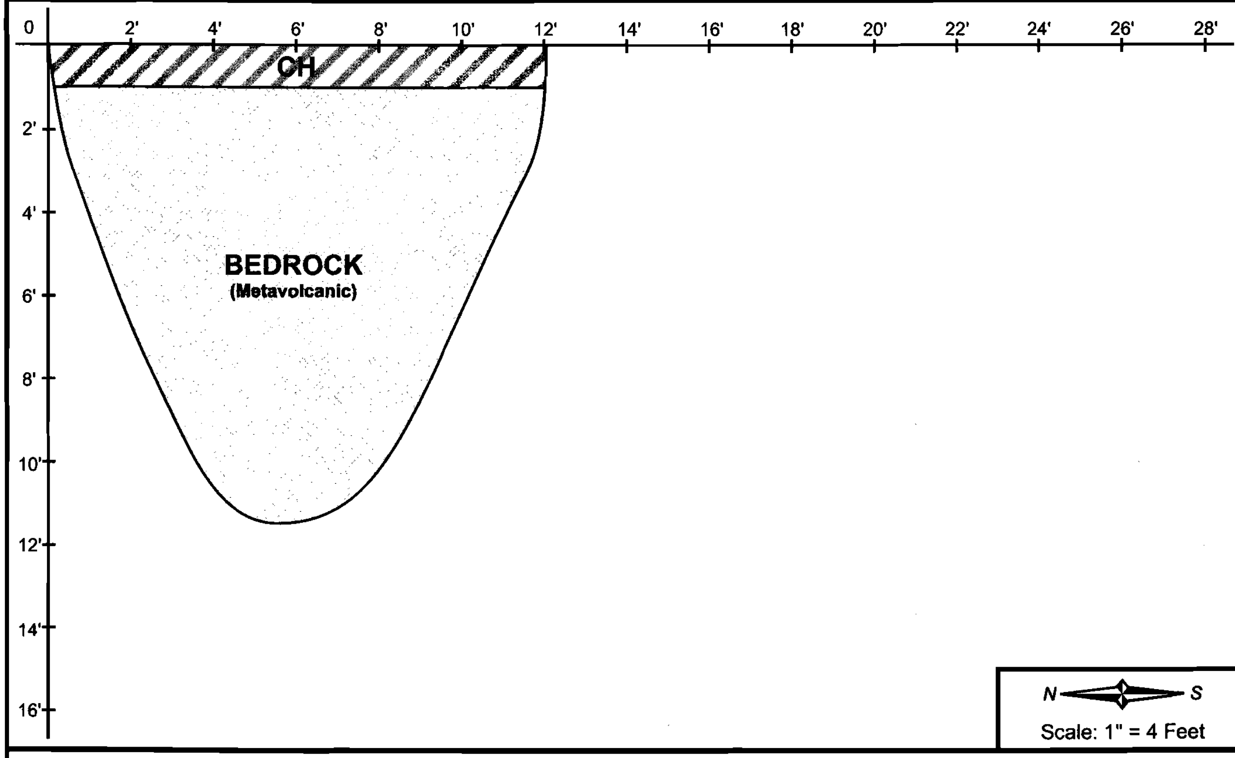


Note: The test pit log indicates subsurface conditions only at the specific location and time noted. Subsurface conditions, including groundwater levels, at other locations of the subject site may differ significantly from conditions which, in the opinion of Youngdahl Consulting Group, Inc., exist at the sampling locations, Note, too, that the passage of time may affect conditions at the sampling locations.

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING	Project No.: E13257.000 **November 2013**	**EXPLORATORY TEST PIT LOG** **El Dorado Springs 23** El Dorado Hills, El Dorado County, California	**FIGURE** **A-4**

Logged By: **DHR**	Date: **11 October 2013**	Lat / Lon: **38.63384 / -121.07929**		Pit No. **TP-3**
Equipment: **John Deere 410 J Backhoe With 18" Bucket**		Pit Orientation: **N - S**	Elevation: **~ 572'**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0 - 1'	Red brown sandy **CLAY (CH)** with trace gravel, soft to medium stiff, dry		***Dense weeds***
@ 1' - 11.5'	Yellow brown metavolcanic **BEDROCK**, completely weathered, friable, closely fractured, dry		**Joints** N25W, 60 SW N15E, 85SE
@ 4' - 9'	*Grades moderately weathered, weakly indurated, moist*		
@ 9' - 10.5'	*Grades brown gray, moderately indurated*		
@ 10.5'- 11.5'	*Grades slightly weathered, indurated*		
	Test pit terminated at 11.5' (practical refusal- 1' / 2 minutes) No free groundwater encountered No caving noted		



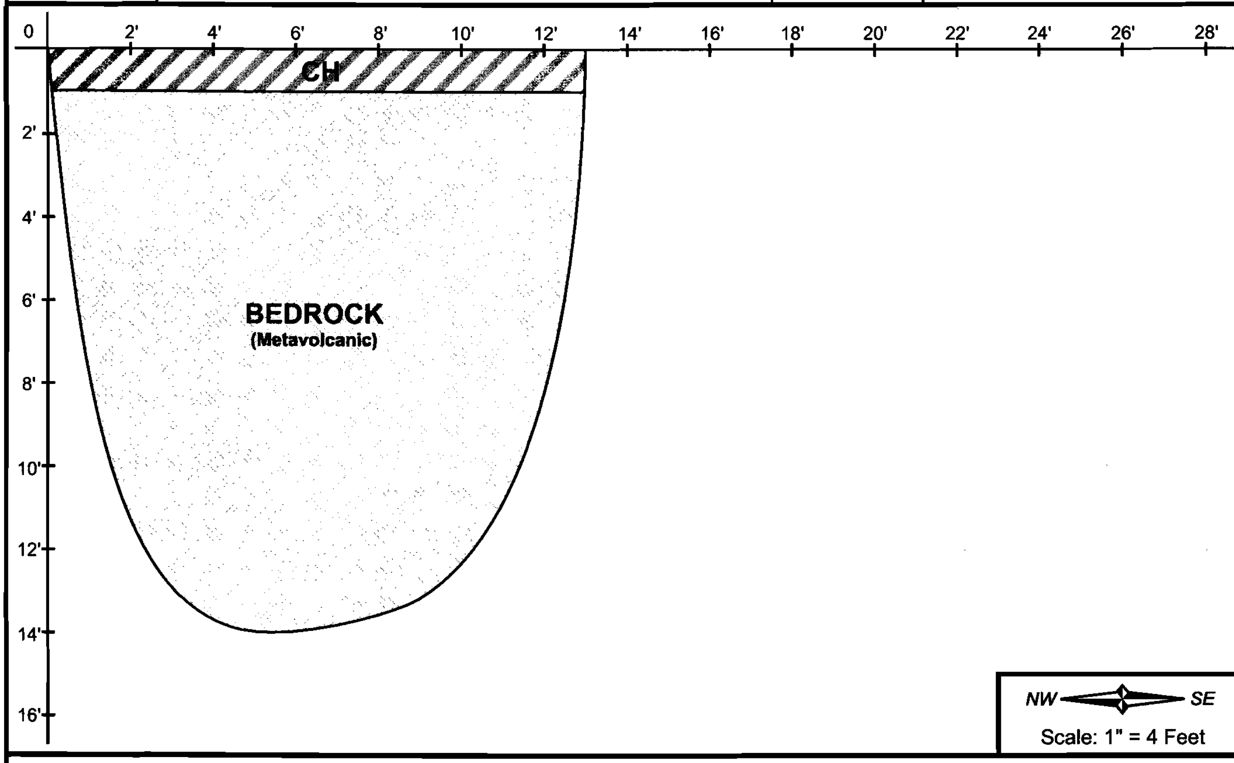
Scale: 1" = 4 Feet

Note: The test pit log indicates subsurface conditions only at the specific location and time noted. Subsurface conditions, including groundwater levels, at other locations of the subject site may differ significantly from conditions which, in the opinion of Youngdahl Consulting Group, Inc., exist at the sampling locations, Note, too, that the passage of time may affect conditions at the sampling locations.

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING	Project No.: E13257.000 **November 2013**	**EXPLORATORY TEST PIT LOG** **El Dorado Springs 23** El Dorado Hills, El Dorado County, California	**FIGURE** **A-5**

Logged By: **DHR**	Date: **11 October 2013**	Lat / Lon: **38.63476 / -121.07871**		Pit No.
Equipment: **John Deere 410 J Backhoe With 18" Bucket**		Pit Orientation: **NW - SE**	Elevation: **~ 558'**	**TP-4**

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0 - 1'	Red brown sandy **CLAY (CH)** with trace gravel, medium stiff, dry		***Dense weeds, small bedrock outcrops nearby***
@ 1' - 14'	Yellow brown metavolcanic **BEDROCK**, completely weathered, friable, closely fractured, manganese and iron oxide staining, 1/2" wide clay partings at fractures, dry		
@ 4' - 6.5'	*Grades highly weathered, weakly indurated, 1" quartz stringers*		
@ 6.5' - 14'	*Grades moderately weathered, weakly to moderately indurated, moist*		
	Test pit terminated at 14' No free groundwater encountered No caving noted		

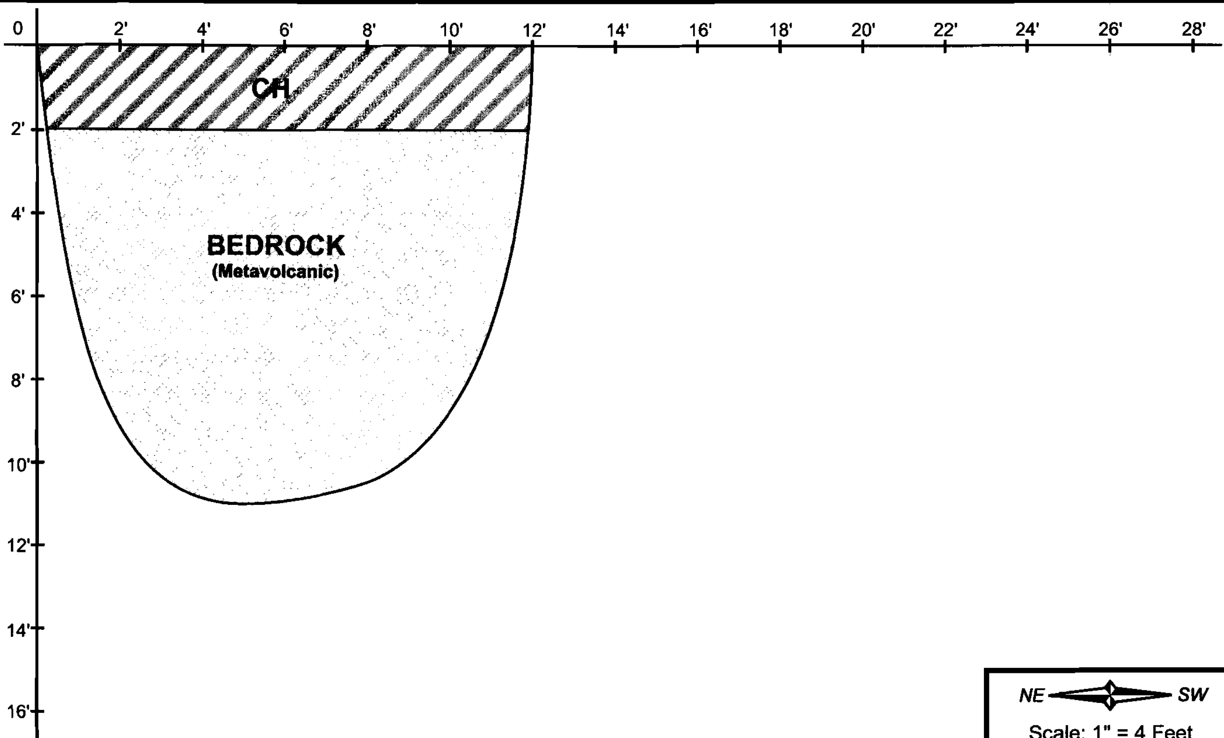


Note: The test pit log indicates subsurface conditions only at the specific location and time noted. Subsurface conditions, including groundwater levels, at other locations of the subject site may differ significantly from conditions which, in the opinion of Youngdahl Consulting Group, Inc., exist at the sampling locations, Note, too, that the passage of time may affect conditions at the sampling locations.

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING	Project No.: E13257.000	**EXPLORATORY TEST PIT LOG**	**FIGURE**
	November 2013	**El Dorado Springs 23** El Dorado Hills, El Dorado County, California	**A-6**

Logged By: **DHR**	Date: **11 October 2013**	Lat / Lon: **38.63518 / -121.07897**	Pit No. **TP-5**
Equipment: **John Deere 410 J Backhoe With 18" Bucket**	Pit Orientation: **NW - SE**	Elevation: **~ 563'**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0 - 2'	Red brown sandy **CLAY (CH)** with few gravel, medium stiff to stiff, dry to moist		*Dense weeds*
@ 2' - 11'	Yellow brown metavolcanic **BEDROCK**, completely weathered, friable, closely fractured, manganese and iron oxide staining, 1/4" wide clay partings in joint fractures, moist		
@ 7' - 10'	*Grades highly weathered, friable to weakly indurated*		
@ 10' - 11'	*Grades moderately weathered, moderately indurated, pillow basalt structuring, with dendritic glass infusion*		
	Test pit terminated at 11' (practical refusal - 1' / 2 minutes) No free groundwater encountered No caving noted		

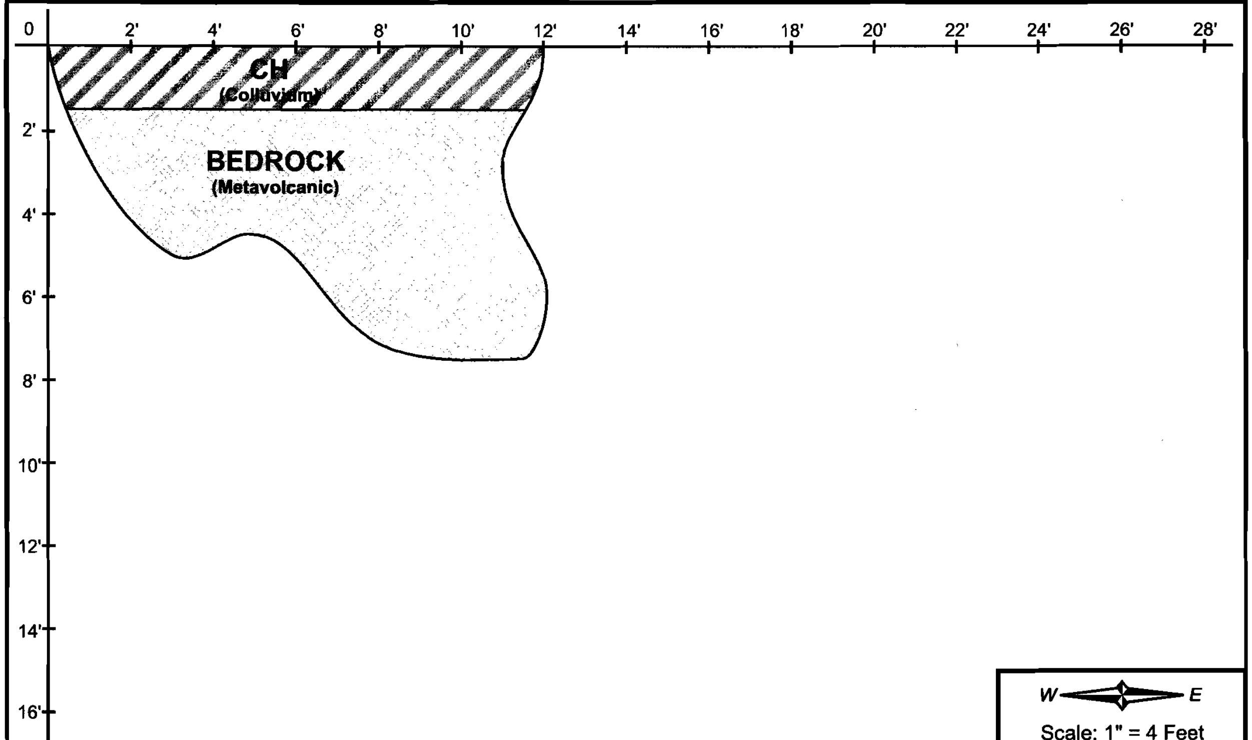


Note: The test pit log indicates subsurface conditions only at the specific location and time noted. Subsurface conditions, including groundwater levels, at other locations of the subject site may differ significantly from conditions which, in the opinion of Youngdahl Consulting Group, Inc., exist at the sampling locations, Note, too, that the passage of time may affect conditions at the sampling locations.

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING	Project No.: E13257.000 **November 2013**	**EXPLORATORY TEST PIT LOG** **El Dorado Springs 23** El Dorado Hills, El Dorado County, California	**FIGURE A-7**

Logged By: **DHR**	Date: **11 October 2013**	Lat / Lon: **38.63648 / -121.07935**		Pit No. **TP-6**
Equipment: **John Deere 410 J Backhoe With 18" Bucket**		Pit Orientation: **W - E**	Elevation: **~ 557'**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0 - 1.5'	Red brown sandy **CLAY (CH)** with some subangular gravel and few cobbles, medium stiff, dry (Colluvium)		***Dense weeds, bedrock outcrops nearby***
@ 1.5' - 7.5'	Yellow brown metavolcanic **BEDROCK**, highly weathered, weakly indurated, closely fractured, 1/8" to 1/4" wide clay partings at joint fractures, manganese and iron oxide staining, dry to moist		**Joints** N82E, 72N N25W, 68E N55W, 40SW
@ 4.5' - 7'	*Grades moderately weathered, moderately indurated*		
@ 7' - 7.5'	*Grades slightly weathered, indurated*		
	Test pit terminated at 7.5' (practical refusal - 6" / 2 minutes) No free groundwater encountered No caving noted		

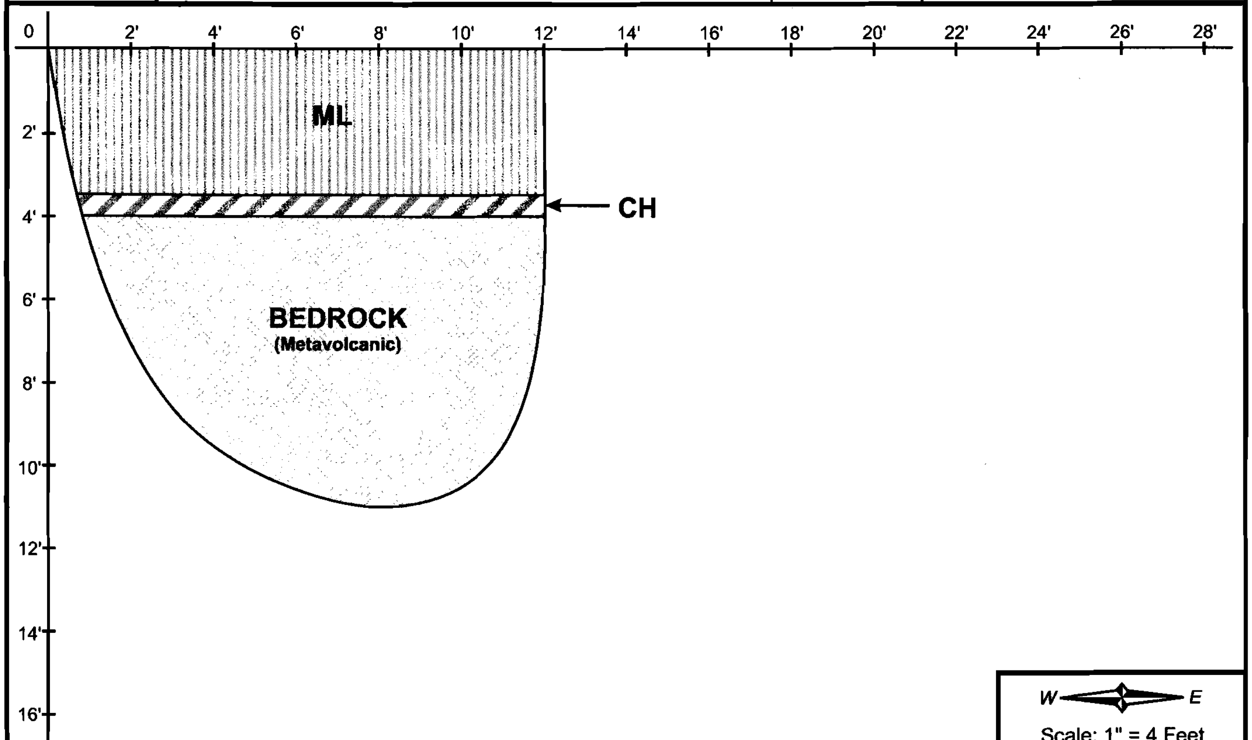


Note: The test pit log indicates subsurface conditions only at the specific location and time noted. Subsurface conditions, including groundwater levels, at other locations of the subject site may differ significantly from conditions which, in the opinion of Youngdahl Consulting Group, Inc., exist at the sampling locations, Note, too, that the passage of time may affect conditions at the sampling locations.

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING	Project No.: E13257.000 **November 2013**	**EXPLORATORY TEST PIT LOG** **El Dorado Springs 23** El Dorado Hills, El Dorado County, California	**FIGURE** **A-8**

Logged By: **DHR**	Date: **11 October 2013**	Lat / Lon: **38.63604 / -121.07811**		Pit No. **TP-7**
Equipment: **John Deere 410 J Backhoe With 18" Bucket**		Pit Orientation: **W - E**	Elevation: **~ 524'**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0 - 3.5'	Red brown sandy **SILT (ML)** with little clay and trace gravel, soft to medium stiff, dry to moist	**BULK 2** @ 2'	***Dense weeds***
@ 3.5' - 4'	Red brown sandy **CLAY (CH)** with little cobble, soft to medium stiff, moist		
@ 4' - 11'	Yellow brown metavolcanic **BEDROCK**, completely weathered, friable, closely fractured, manganese and iron oxide staining, dry to moist		**Joints** N35W, 82NE N65E, 48S
@ 5.5' - 10.5'	*Grades moderately weathered, weakly indurated*		
@ 10.5' - 11'	*Grades slightly weathered, moderately indurated*		
	Test pit terminated at 11' (practical refusal - 1' / 2 minutes) No free groundwater encountered No caving noted		

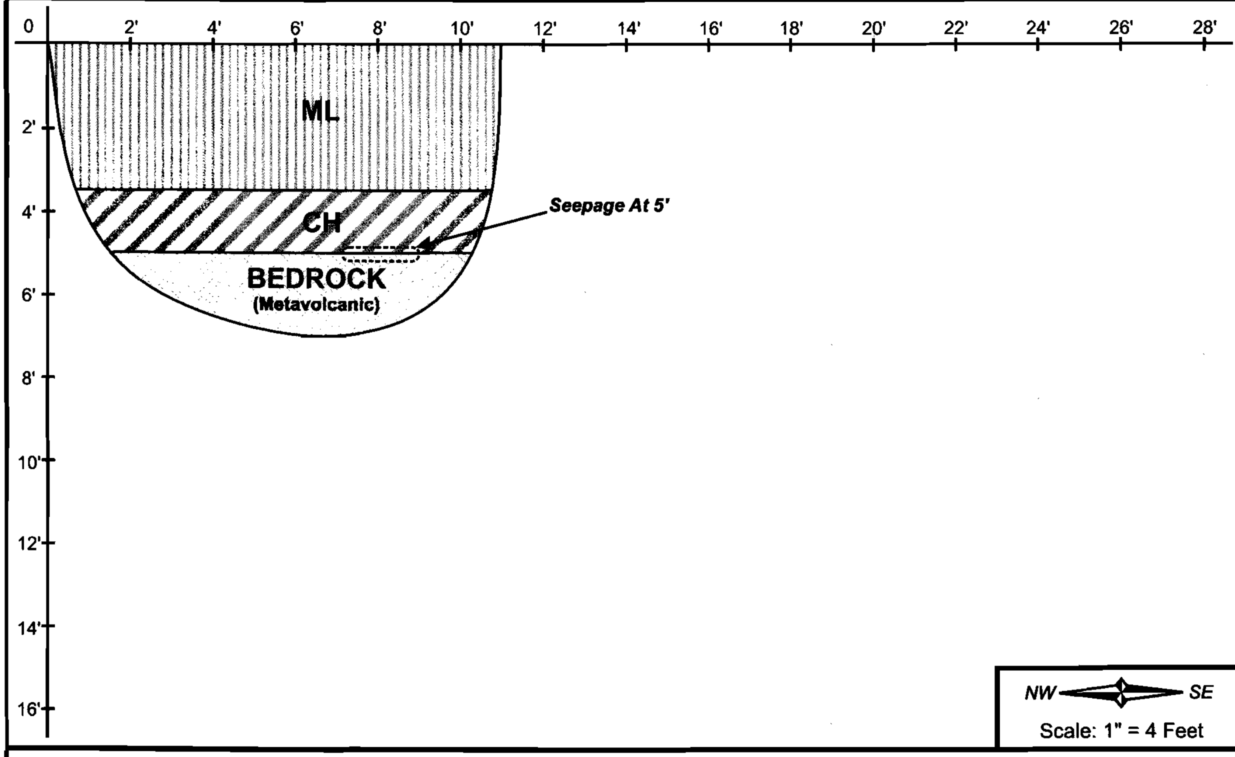


Note: The test pit log indicates subsurface conditions only at the specific location and time noted. Subsurface conditions, including groundwater levels, at other locations of the subject site may differ significantly from conditions which, in the opinion of Youngdahl Consulting Group, Inc., exist at the sampling locations, Note, too, that the passage of time may affect conditions at the sampling locations.

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING	Project No.: E13257.000 **November 2013**	**EXPLORATORY TEST PIT LOG** **El Dorado Springs 23** El Dorado Hills, El Dorado County, California	**FIGURE** **A-9**

Logged By: **DHR**	Date: **11 October 2013**	Lat / Lon: **38.63705 / -121.07777**		Pit No. **TP-8**
Equipment: **John Deere 410 J Backhoe With 18" Bucket**		Pit Orientation: **NW - SE**	Elevation: **~ 524'**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0 - 3.5'	Red brown sandy **SILT (ML)** with little clay and trace gravel, stiff to very stiff, dry to moist		*Dense weeds*
@ 3.5' - 5'	Red brown sandy **CLAY (CH)**, medium stiff, moist		
@ 5' - 7'	Light gray metavolcanic **BEDROCK**, moderately to slightly weathered, moderately indurated, closely fractured, 1/4" clay partings at joint fractures, moist to wet		
@ 6.5' - 7'	*Grades slightly weathered, indurated*		
	Test pit terminated at 7' (practical refusal - 4" / 2 minutes) Seepage encountered at 5' Caving noted from 4.5' - 5.5'		



Note: The test pit log indicates subsurface conditions only at the specific location and time noted. Subsurface conditions, including groundwater levels, at other locations of the subject site may differ significantly from conditions which, in the opinion of Youngdahl Consulting Group, Inc., exist at the sampling locations, Note, too, that the passage of time may affect conditions at the sampling locations.

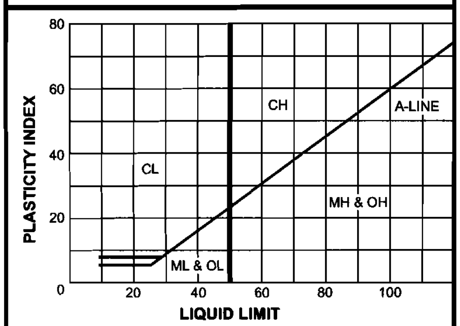
YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING	Project No.: E13257.000 **November 2013**	**EXPLORATORY TEST PIT LOG** **El Dorado Springs 23** El Dorado Hills, El Dorado County, California	**FIGURE A-10**

UNIFIED SOIL CLASSIFICATION SYSTEMS

MAJOR DIVISION			SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS Over 50% > #200 sieve	GRAVELS Over 50% > #4 sieve	Clean **GRAVELS** With Little Or No Fines	GW	Well graded **GRAVELS, GRAVEL-SAND** mixtures
			GP	Poorly graded **GRAVELS, GRAVEL-SAND** mixtures
		GRAVELS With Over 12% Fines	GM	Silty **GRAVELS**, poorly graded **GRAVEL-SAND-SILT** mixtures
			GC	Clayey **GRAVELS**, poorly graded **GRAVEL-SAND-CLAY** mixtures
	SANDS Over 50% < #4 sieve	Clean **SANDS** With Little Or No Fines	SW	Well graded **SANDS**, gravelly **SANDS**
			SP	Poorly graded **SANDS**, gravelly **SANDS**
		SANDS With Over 12% Fines	SM	Silty **SANDS**, poorly graded **SAND-SILT** mixtures
			SC	Clayey **SANDS**, poorly graded **SAND-CLAY** mixtures
FINE GRAINED SOILS Over 50% < #200 sieve	**SILTS & CLAYS** Liquid Limit < 50		ML	Inorganic **SILTS**, silty or clayey fine **SANDS**, or clayey **SILTS** with plasticity
			CL	Inorganic **CLAYS** of low to medium plasticity, gravelly, sandy, or silty **CLAYS**, lean **CLAYS**
			OL	Organic **CLAYS** and organic silty **CLAYS** of low plasticity
	SILTS & CLAYS Liquid Limit > 50		MH	Inorganic **SILTS**, micaceous or diamacious fine sandy or silty soils, elastic **SILTS**
			CH	Inorganic **CLAYS** of high plasticity, fat **CLAYS**
			OH	Organic **CLAYS** of medium to high plasticity, organic **SILTS**
HIGHLY ORGANIC CLAYS			PT	PEAT & other highly organic soils

PLASTICITY CHART

USED FOR CLASSIFICATION OF FINE GRAINED SOILS



SAMPLE DRIVING RECORD

BLOWS PER FOOT	DESCRIPTION
25	25 Blows drove sampler 12 inches, after initial 6 inches of seating
50/7"	50 Blows drove sampler 7 inches, after initial 6 inches of seating
50/3"	50 Blows drove sampler 3 inches during or after initial 6 inches of seating

Note: To avoid damage to sampling tools, driving is limited to 50 blows per 6 inches during or after seating interval.

SOIL GRAIN SIZE

U.S. STANDARD SIEVE		6"		3"		¾"		4		10		40		200		
SOIL	BOULDER		COBBLE		GRAVEL COARSE		GRAVEL FINE		SAND COARSE		SAND MEDIUM		SAND FINE		SILT	CLAY
GRAIN SIZE IN MILLIMETERS		150		75		19		4.75		2.0		.425		0.075	0.002	

KEY TO PIT & BORING SYMBOLS

- Standard Penetration test
- 2.5" O.D. Modified California Sampler
- 3" O.D. Modified California Sampler
- Shelby Tube Sampler
- 2.5" Hand Driven Liner
- Bulk Sample
- Water Level At Time Of Drilling
- Water Level After Time Of Drilling
- P Perched Water

KEY TO PIT & BORING SYMBOLS

	Joint
	Foliation
	Water Seepage
NFWE	No Free Water Encountered
FWE	Free Water Encountered
REF	Sampling Refusal
DD	Dry Density (pcf)
MC	Moisture Content (%)
LL	Liquid Limit
PI	Plasticity Index
PP	Pocket Penetrometer
UCC	Unconfined Compression (ASTM D2166)
TVS	Pocket Torvane Shear
EI	Expansion Index (ASTM D4829)
Su	Undrained Shear Strength

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING	Project No.: E13257.000 / **November 2013**	**SOIL CLASSIFICATION CHART AND LOG EXPLANATION El Dorado Springs 23** El Dorado Hills, El Dorado County, California	**FIGURE A-11**

APPENDIX B

Laboratory Testing

Direct Shear Test
Atterberg Limit Determination
Modified Proctor Test
R-Value Test
Corrosivity Test

Introduction
Our laboratory testing program for this evaluation included numerous visual classifications, direct shear, plasticity index, modified proctor, resistance value, and corrosivity tests. The following paragraphs describe our procedures associated with each type of test. Graphical results of certain laboratory tests are enclosed in this appendix. The contents of this appendix shall be integrated with the geotechnical engineering study of which it is a part. They shall not be used in whole or in part as a sole source for information or recommendations regarding the subject site.

Laboratory Testing Procedures
Visual Classification: Visual soil classifications were conducted on all samples in the field and on selected samples in our laboratory. All soils were classified in general accordance with the Unified Soil Classification System, which includes color, relative moisture content, primary soil type (based on grain size), and any accessory soil types. The resulting soil classifications are presented on the exploration logs in Appendix A.

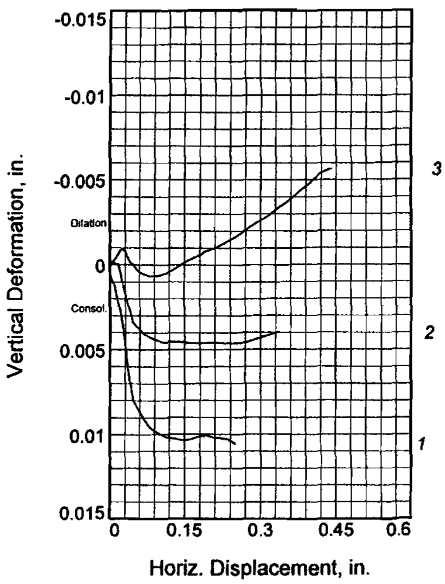
Soil Strength Determination: The strength parameters of the foundation soils were based on a direct shear test (ASTM D3080) performed on a representative remolded sample of the near-surface soils. The results of this test is presented on Figure B-1, this Appendix.

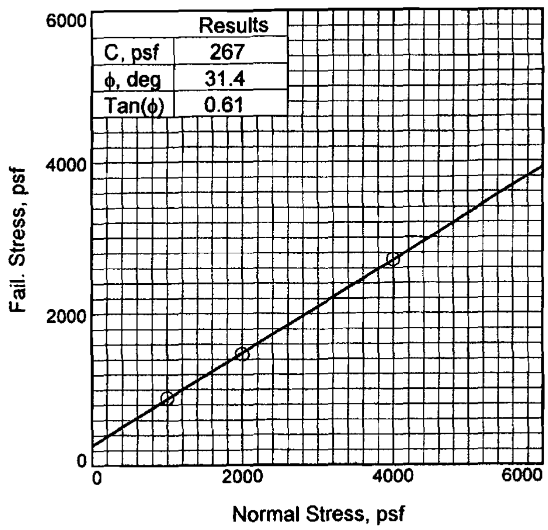
Atterberg Limit Determination: Atterberg limits are used primarily for classifying and indexing cohesive soils. The liquid and plastic limits, which are defined as the moisture contents of a cohesive soil at arbitrarily established limits for liquid and plastic behavior, respectively, were determined for a selected sample in general accordance with ASTM D-4318. The results of this test are presented on the enclosed Atterberg limit graph Figure B-2, this Appendix.

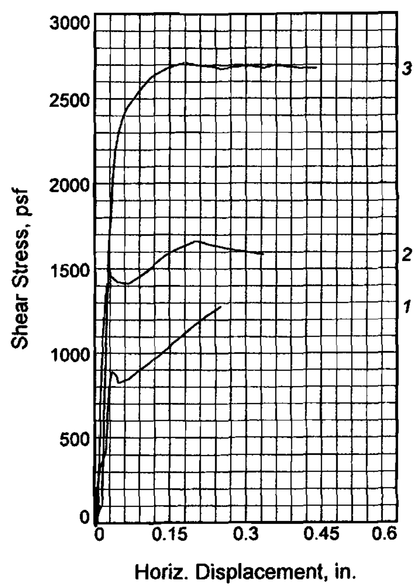
Maximum Dry Density Determination: A modified proctor test (ASTM D1557) was conducted to provide the optimum moisture and maximum dry density on the near surface materials. The results of this test are presented on Figure B-3, this Appendix.

Resistance Value Determination: An R-Value test (California Test Method 301-F or ASTM D2844) was performed to obtain asphalt concrete pavement design parameters. The results of this test is presented on Figures B-4, this Appendix.

Corrosivity Tests: A corrosivity test typically comprises individual measurements of pH, electrical resistivity, sulfate content, and chloride content, which together indicate the corrosiveness of a soil. Corrosivity tests were performed on selected samples by an independent analytical laboratory working under subcontract to Youngdahl Consulting Group, Inc. The results of this test is presented on the enclosed analytical certificate, this Appendix.







	Sample No.	1	2	3
Initial	Water Content, %	12.5	12.5	12.5
	Dry Density, pcf	116.1	116.1	116.1
	Saturation, %	66.5	66.5	66.5
	Void Ratio	0.5378	0.5378	0.5378
	Diameter, in.	2.500	2.500	2.500
	Height, in.	1.000	1.000	1.000
At Test	Water Content, %	17.8	17.8	17.3
	Dry Density, pcf	118.3	118.3	119.4
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.5088	0.5089	0.4955
	Diameter, in.	2.500	2.500	2.500
	Height, in.	0.981	0.981	0.973
	Normal Stress, psf	1000	2000	4000
	Fail. Stress, psf	889	1468	2712
	Displacement, in.	0.035	0.027	0.182
	Ult. Stress, psf			
	Displacement, in.			
	Strain rate, %/min.	0.0025	0.0025	0.0025

Sample Type: Remolded
Description: Brown Sandy SILT w/ trace Clay

Specific Gravity= 2.86
Remarks: Remolded to 90% of 129.0 pcf

Figure B-1

Client:

Project: El Dorado Springs

Source of Sample: Native
Sample Number: Bulk 2, TP-7
Proj. No.: E13257.000 **Date Sampled:**

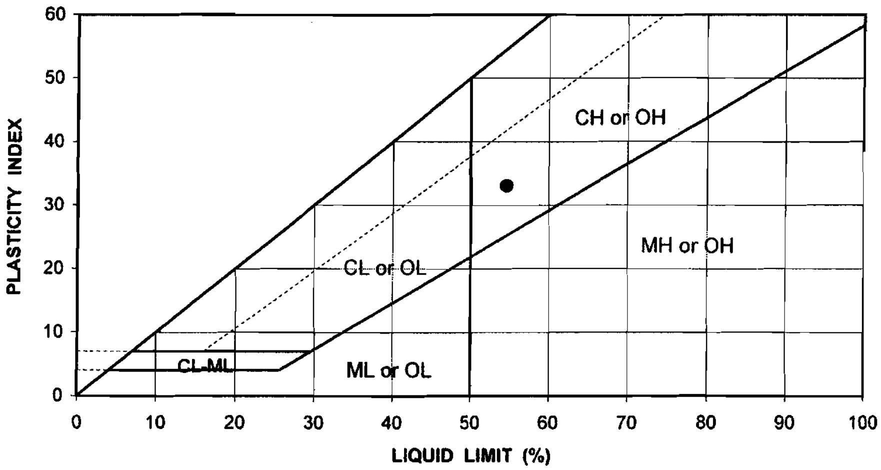
DIRECT SHEAR TEST REPORT
YOUNGDAHL CONSULTING GROUP, INC.
El Dorado Hills, California

PLASTICITY INDEX TEST (ASTM D 4318)

SAMPLE NO.: **Bulk 1, TP-1** DEPTH:

SAMPLE DESC.: **Red Brown Sandy CLAY**

REMARKS:



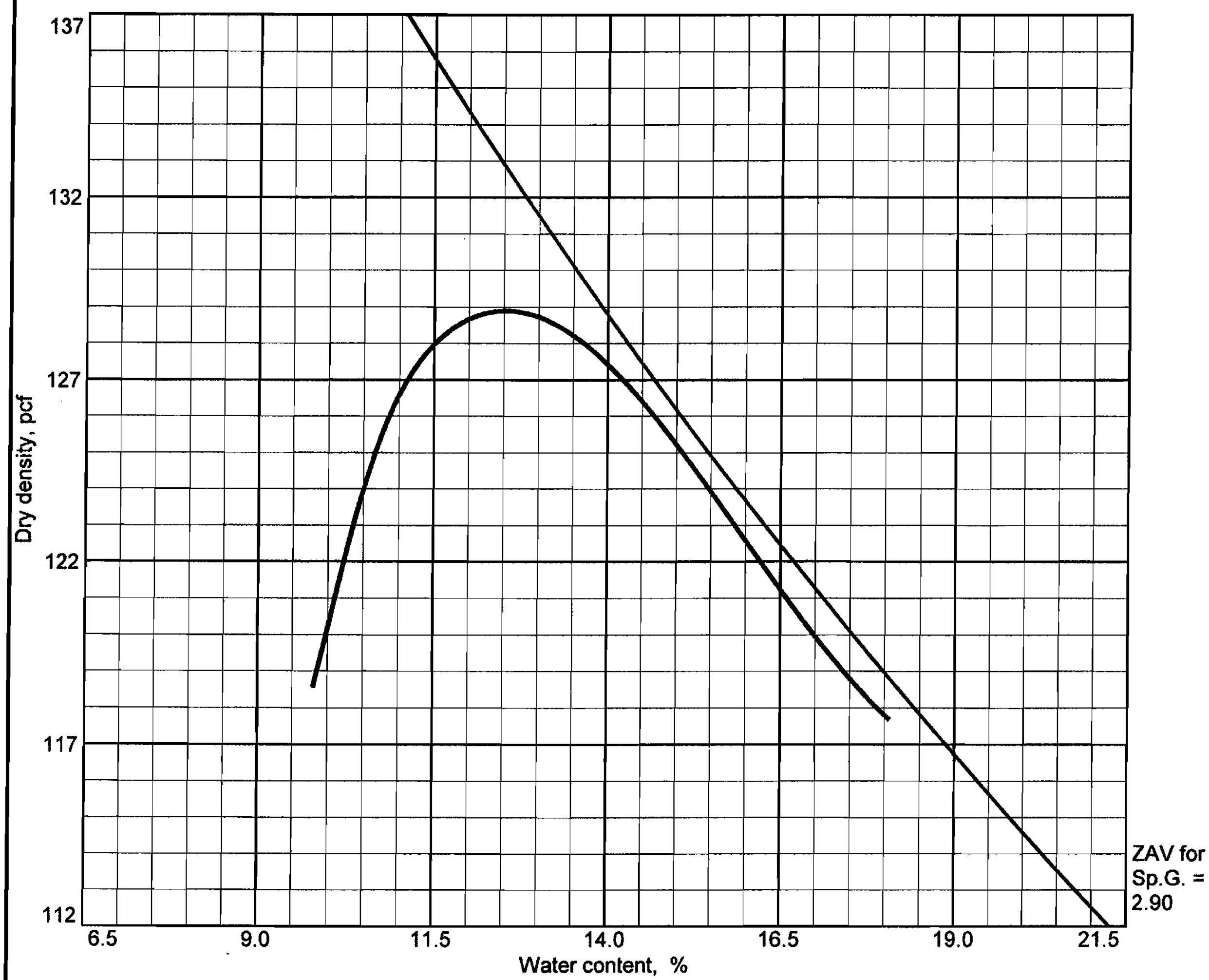
LIQUID LIMIT (%):	55
PLASTIC LIMIT (%):	22
PLASTICITY INDEX:	33
GROUP SYMBOL:	CH

Tested By: BLM
Reviewed By: BLM

TEST PARAMETERS:
1. Atterberg Limit Test is Processed Over #40 Sieve
2. Samples Are Air Dried & Dry Preparation Method Used

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING	El Dorado Springs		FIGURE NO
	PROJECT NO **E13257.000**	DATE **November 2013**	**B-2**

COMPACTION TEST REPORT



Test specification: ASTM D 1557 Method A Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
				2.86				

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 129.0 pcf Optimum moisture = 12.5 %	Brown Sandy SILT w/ trace Clay

Project No. E13257.000 **Client:**

Project: El Dorado Springs

Date: 10/15/2013

● **Source:** Native **Sample No.:** Bulk 2, TP-7

YOUNGDAHL CONSULTING GROUP, INC.

El Dorado Hills, California

Remarks:

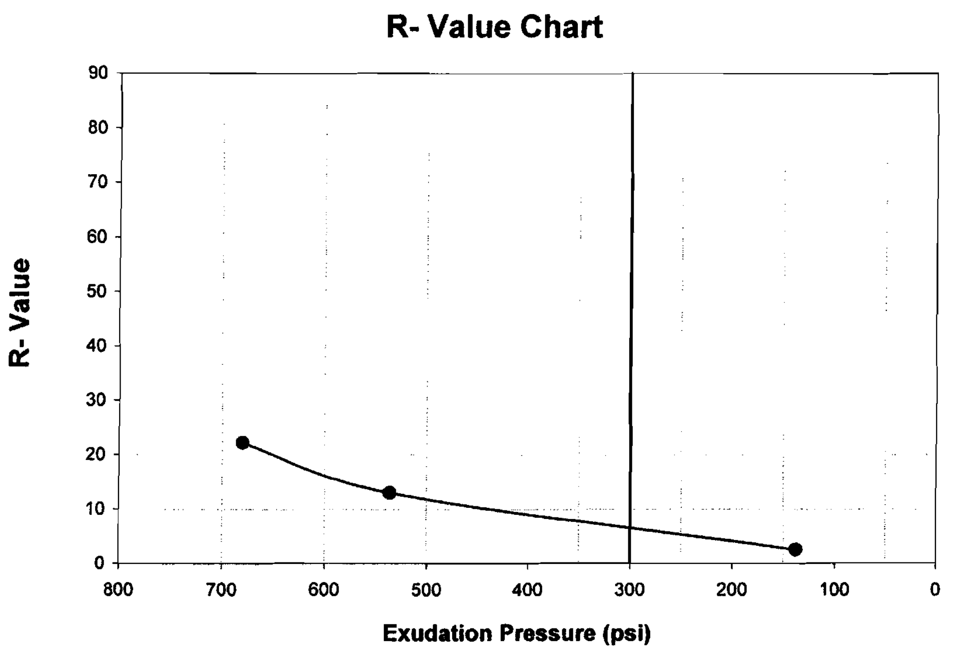
Figure B-3

RESISTANCE VALUE TEST (Cal Test 301, ASTM D2844)

Sample I.D.: Bulk 8, C-way Depth:

Description: Brown Sandy SILT w/ trace clay

Test Specimen	S	E	W
Moisture Content (%)	12.2	11.1	10.0
Dry Density (pcf)	108.8	127.2	123.8
Expansion Dial (0.0001")	95	119	287
Expansion Pressure (psf)	411.4	515.3	1242.7
Exudation Pressure (psi)	137.7	536.4	680.4
Resistance Value "R"	2	13	22
R Value at 300 psi Exudation Pressure:			**7**



YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING	El Dorado Springs		FIGURE NO
	PROJECT NO	DATE	
	E13257.000	October 2013	B-4

Sunland Analytical
11353 Pyrites Way
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 10/25/13
Date Submitted 10/21/13

To: Brian McCormick
Youngdahl Consulting Group
1234 Glenhaven Ct.
El Dorado Hills, CA, 95630

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following:
Location : P13-378-E.SPRINGS 23 Site ID: TP-1 BULK
Thank you for your business.

* For future reference to this analysis please use SUN # 65763 - 136160

EVALUATION FOR SOIL CORROSION

Soil pH	6.16		
Minimum Resistivity	0.86	ohm-cm (x1000)	
Chloride	9.0 ppm	0.0009	%
Sulfate-S	1.0 ppm	0.0001	%

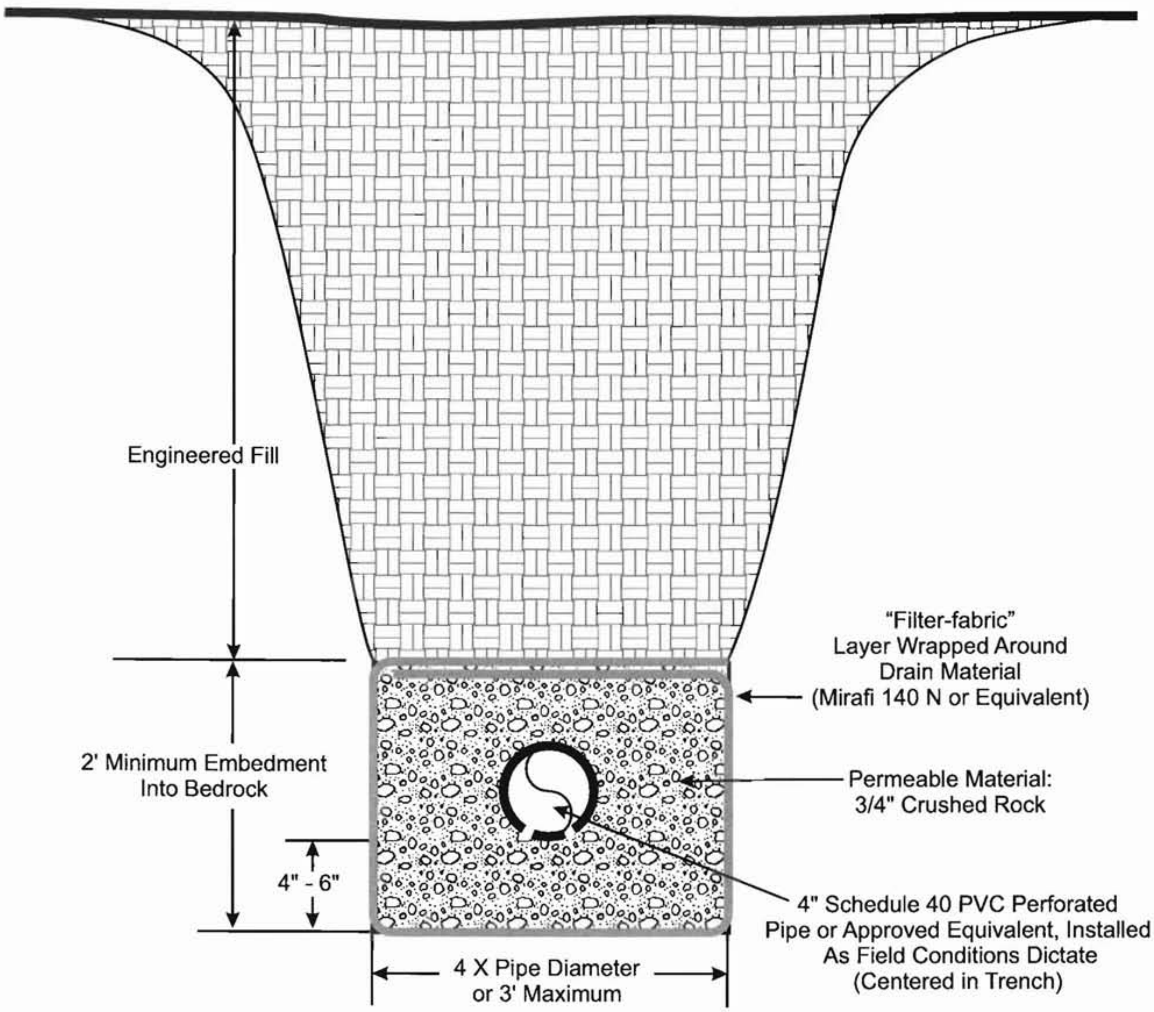
METHODS:
pH and Min.Resistivity CA DOT Test #643 Mod.(Sm.Cell)
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

APPENDIX C

Details

Canyon Style Drain
Keyway and Bench with Drain
Plug and Drain
Site Wall Drainage
Subdrain

Canyon Drain Installation
(Typical)



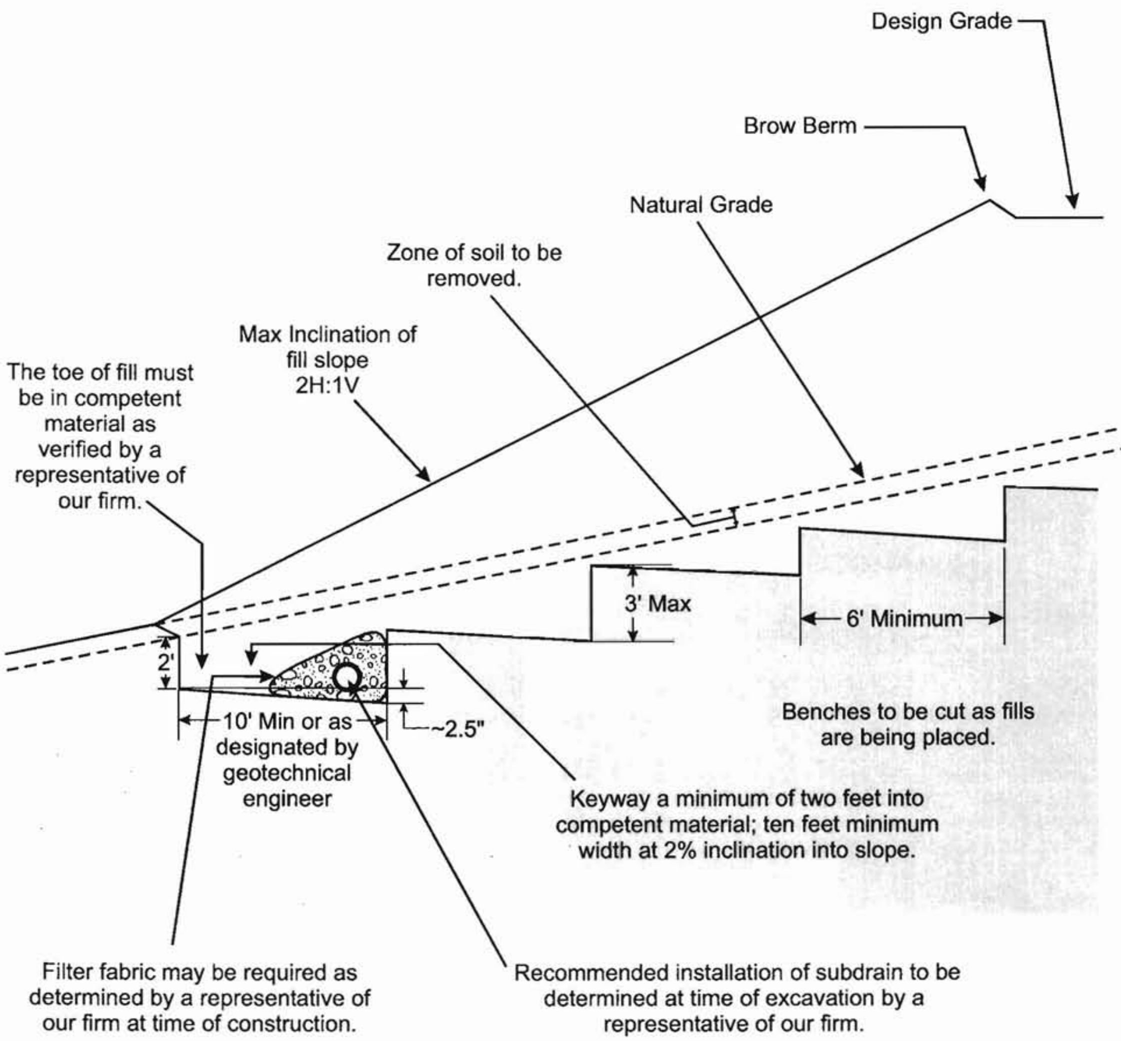
YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING	Project No.: E13257.000	**CANYON STYLE DRAIN DETAIL**	**FIGURE**
	November 2013	**El Dorado Springs 23** El Dorado Hills, El Dorado County, California	**C-1**

PLACEMENT OF FILL ON NATURAL SLOPE

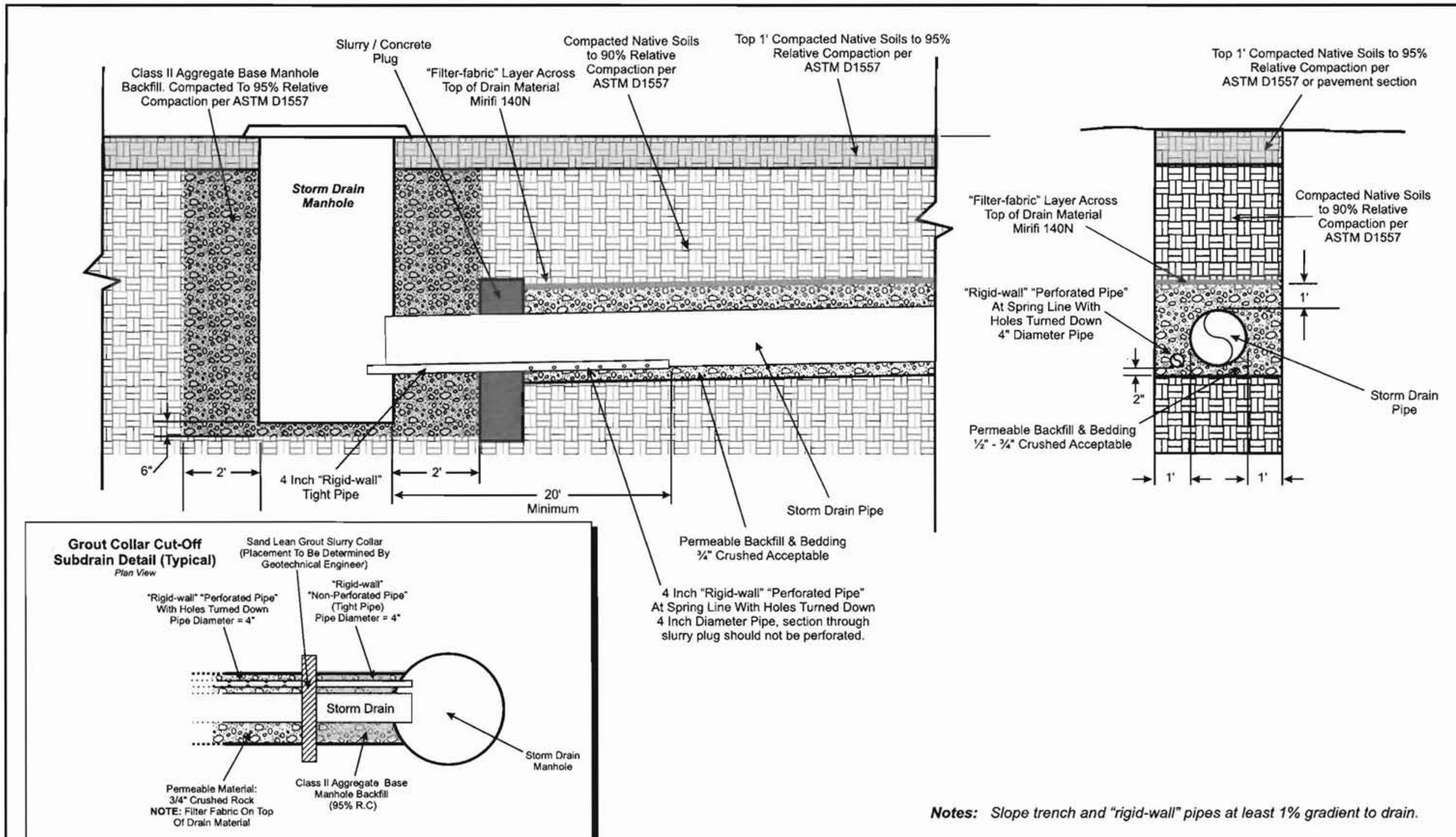
(Typical)

All keyways should be observed and approved prior to placement of fill.

A keyway is required by CBC for fills on natural slopes of 5H:1V or steeper.



YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING	Project No.: E13257.000 **November 2013**	**KEYWAY & BENCH WITH DRAIN** **El Dorado Springs 23** El Dorado Hills, El Dorado County, California	**FIGURE** **C-2**

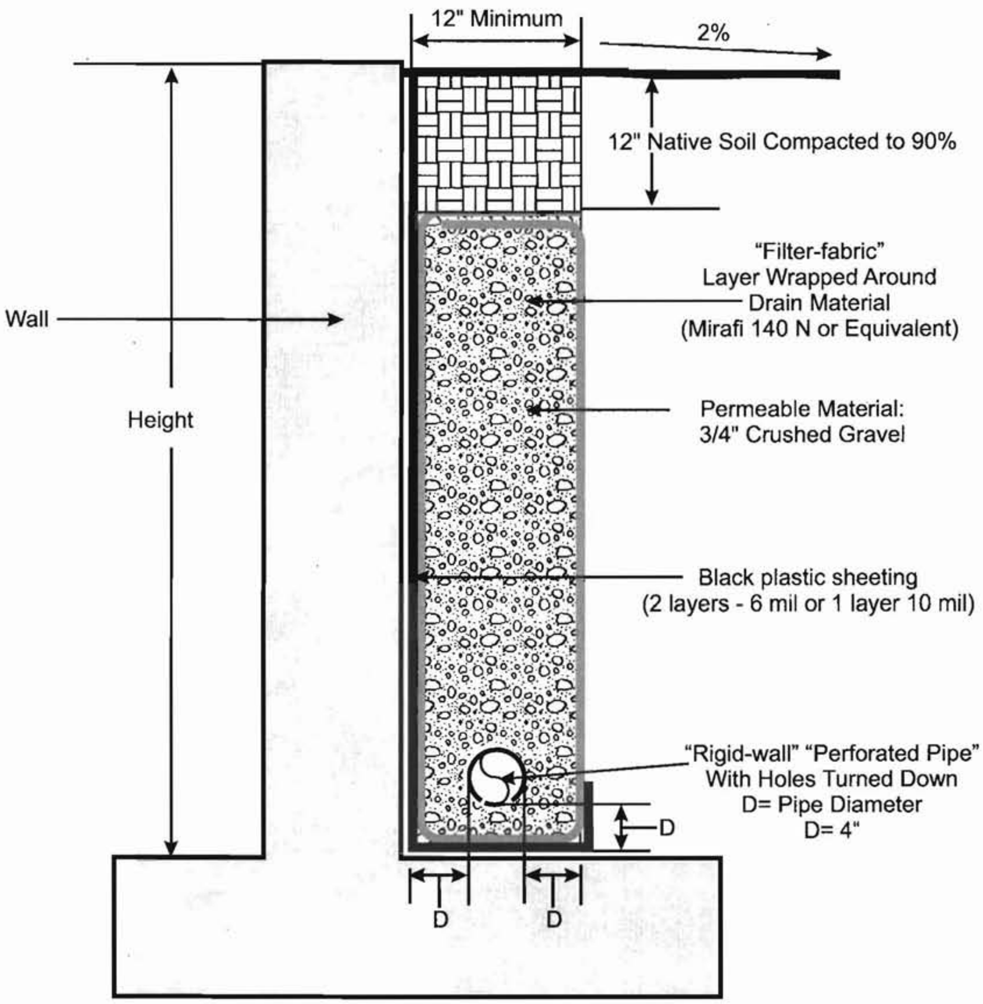


Notes: Slope trench and "rigid-wall" pipes at least 1% gradient to drain.

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING	Project No.: E13257.000 November 2013	**TYPICAL STORM DRAIN / SUB-DRAIN DETAIL** **El Dorado Springs 23** El Dorado Hills, El Dorado County, California	**FIGURE C-3**

Retaining Wall With "Perforated Pipe Sub-Drain"

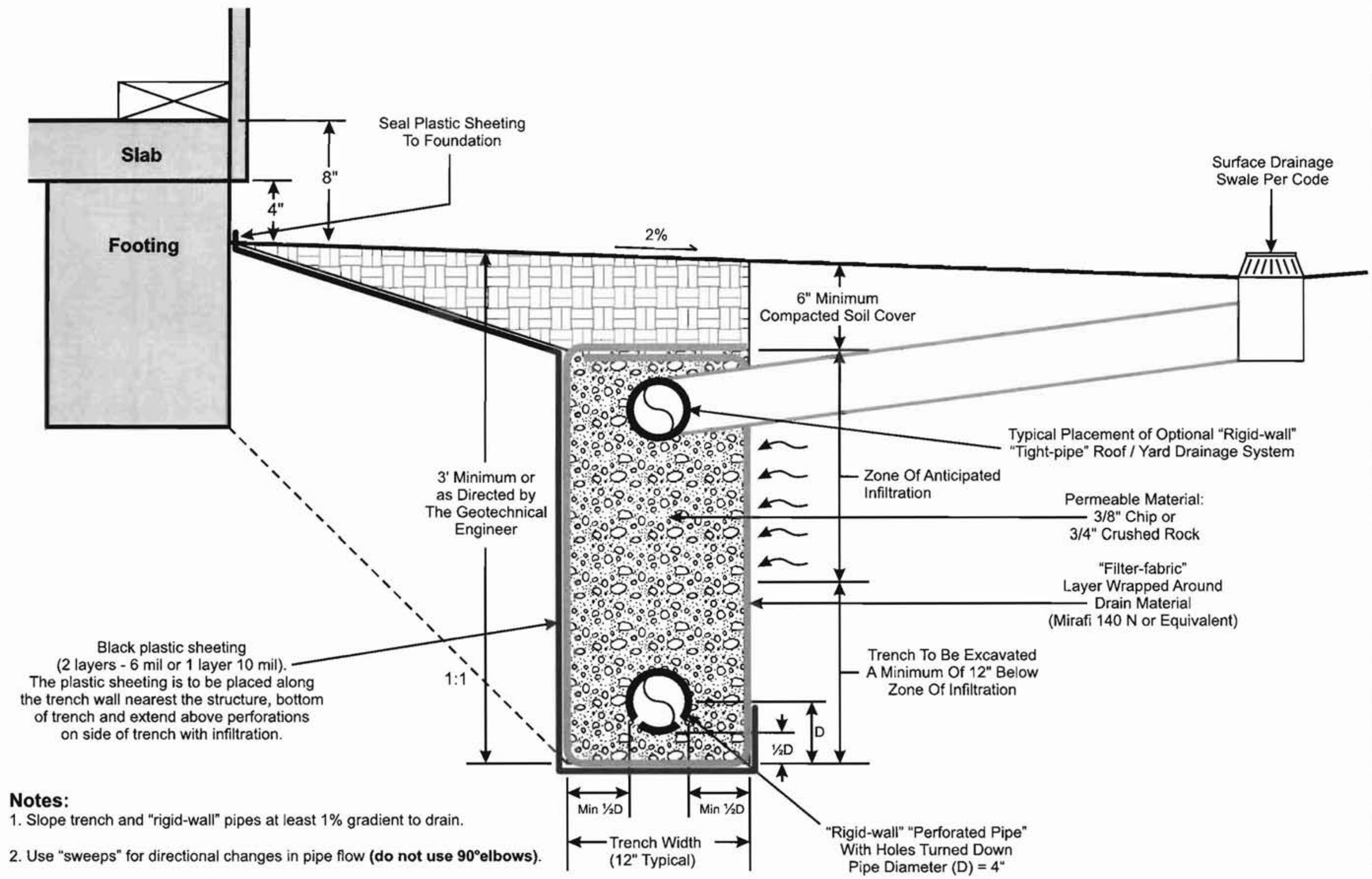
(Typical Cross Section)



Notes:
1. Slope trench and "rigid-wall" pipes at least 1% gradient to drain to an appropriate outfall area away from residence.
2. Use "sweeps" for directional changes in pipe flow **(do not use 90°elbows)**.
3. Provide periodic "clean-outs".
4. Washed clean permeable material.

Not To Scale

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING	Project No.: E13257.000 **November 2013**	**RETAINING WALL DRAIN DETAIL** **El Dorado Springs 23** El Dorado Hills, El Dorado County, California	**FIGURE** **C-4**



Notes:

1. Slope trench and "rigid-wall" pipes at least 1% gradient to drain.
2. Use "sweeps" for directional changes in pipe flow **(do not use 90°elbows)**.
3. Provide sweeps to periodic "clean-outs".
4. Washed clean permeable material.

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING	Project No.: E13257.000 / **November 2013**	**SUB-DRAIN DETAIL** **El Dorado Springs 23** El Dorado Hills, El Dorado County, California	**FIGURE** **C-5**

APPENDIX D
Refraction Seismic Investigation

Refraction Seismic Investigation
at the
El Dorado Springs Project Site,
El Dorado Hills,
El Dorado County, California

GGSI Project No. 2013-20.01

Prepared by:

Gasch Geophysical Services, Inc.
Rancho Cordova, California 95742-6576

Submitted to:

Mr. John Youngdahl
Youngdahl Consulting Group, Inc.
1234 Glenhaven Court
El Dorado Hills, California 95762

October, 2013

GASCH GEOPHYSICAL SERVICES, INC.
WWW.GEOGASCH.COM Since 1969

October 25, 2013

Mr. John Youngdahl
Youngdahl Consulting Group, Inc.
1234 Glenhaven Court
El Dorado Hills, California 95762

Re: Refraction Seismic Investigation at the El Dorado Springs Project Site, El Dorado Hills, El Dorado County, California.
GGSI Project No. 2013-20.01
YCG Project No. E13257.000

Dear Mr. Youngdahl;

At your request and authorization, Gasch Geophysical Services, Inc. (GGSI) has completed a refraction seismic investigation to evaluate the excavatability characteristics of the sub-surface materials at the El Dorado Springs Project Site in El Dorado Hills, El Dorado County, California (Figure 1).

Purpose

The purpose of this investigation was to determine the depth to higher velocity material and also define the rippability (excavatability) characteristics of the sub-surface materials. The refraction seismic (RS) method was used to evaluate the rock velocities on site, as seismic primary-wave travel times are used to quantify the rock velocities and as a result, can determine the general competency/rippability in areas of various rock types.

Method, Instrumentation and Software

The RS method measures the velocity at which a seismic wave propagates through a soil or rock medium. In this case, the primary (p-wave) or compressional seismic wave was measured. Higher seismic p-wave velocities (measured in feet per second, ft/s) indicate material of higher density, thus quantifying the competency, or strength of the soil or rock medium and providing an estimation of the rippability and/or excavatability of the sub-surface materials.

GGSI's seismic data acquisition system was a Seistronix EX-6 Explorer which is a distributed, 24-bit digital instrument with data output to electronic media for subsequent processing. Geophones were single, 28-Hz digital grade units manufactured by OYO Geospace Corporation. Spread cables were manufactured by Pro-Seismic Services. The energy source for this project was a twelve pound sledge hammer with a wire-less radio link for system triggering. All data were processed in house, on our data reduction and plotting workstation.

Refraction seismic data processing was carried out using Rayfract® version 3.23. This refraction seismic processing software utilizes Wavepath Eikonal Traveltime (WET) tomography which models multiple signal propagation paths contributing to one first break (the Fresnel volume approach), while conventional ray tracing tomography is limited to the modeling of just one ray path per first break. An Eikonal solver is used for traveltime field computation which models diffraction in addition to refraction and transmission of acoustic waves. As a result, the velocity anomaly imaging capability is enhanced with the WET tomographic inversion method compared to conventional ray tomography. This software is developed by Intelligent Resources, Inc. of Vancouver, British Colombia, Canada.

A color-coded seismic velocity cross-section of the subsurface has been generated for each RS line, where cool colors (blues) indicate lower seismic velocities and warm colors (reds) indicate higher velocities. Color scaling of these seismic velocity sections is based on the range of seismic velocity values calculated. Velocity scaling has been normalized on all RS velocity sections.

Data Acquisition Parameters

A total of 5 RS lines were acquired during this investigation. RS Line locations were selected by Youngdahl personnel and adjusted slightly to allow for efficient data acquisition. All RS Lines were acquired with geophone stations spaced at 20-foot intervals and energy source point located at 40-foot intervals along the line, as well as off the ends of each line. Each RS Line utilized 12 active geophone stations and 8 source points for a total line length of 260 feet each. A total of 1,300 lineal feet of data was acquired and the collection of the field data was carried out on October 9th, 2013. The locations of the RS lines are presented on Figure 2.

Rippability

Rippability is dependent on the physical condition of the rock masses to be excavated. In addition to rock type and degree of weathering, structural features in the rock such as bedding planes, cleavage planes, joints, fractures, consolidation and shear zones also influence rippability. Rock masses tend to be more easily ripped if they have well defined, closely spaced fractures, joints, or other planes of weakness. Massive rock bodies which lack discontinuities may allow for slow and difficult ripping or refusal, even where partially weathered, and may require blasting to break the rock for efficient removal.

The association between the seismic velocity of any given earth material and its rippability varies greatly from one type of earth-moving equipment to another. For example, although a large track laying dozer with a single ripper tooth can sometimes rip material with seismic velocities in excess of 10,000 ft/s. GGSI has experienced a limiting (refusal) velocity for large excavators to range from 3,500 ft/s to 4,500 ft/s, and a standard backhoe may meet refusal at seismic velocities as low as 2,000 ft/s. Ultimately, the relationship between seismic velocity and rippability is dependent on both: site conditions *and* equipment and/or operator ability.

Seismic p-wave velocities are related to both rock hardness and fracture density. Rippability has been empirically correlated to refraction seismic velocities by Caterpillar Inc., as displayed on Figure 8 for a CAT D10R (Caterpillar Performance Handbook, Edition 32, October 2001). According to this chart, metamorphic rock becomes marginally rippable near 7,800 ft/s; and non-rippable at about 9,500 ft/s for a D10R dozer. These estimations are based on the lowest values for metamorphic rocks on the CAT chart; however, site geology and topography may cause some variations of these values. It has been our experience with the rock in this area that the CAT chart's estimation of marginally rippable velocities is high. We have found that, due to the nature of the rock on site, the non-rippable velocity is more likely around 7,500 ft/s or less. Difficult or "marginally" rippable rock will be encountered near velocities of 6,000 ft/s.

The Caterpillar Chart of Ripper Performance should be considered as being only one indicator of rippability. Ripper tooth penetration is the key to successful ripping, regardless of seismic velocity. This is particularly true in finer-grained, homogeneous materials and in tightly cemented formations. Ripping success may ultimately be determined by the operator finding the proper combination of factors, such as: number of shanks used, length and depth of shank, tooth angle, direction of travel, and use of throttle. Although low seismic velocities in any rock type indicate probable rippability; if the fractures, bedding and/or joints do not allow tooth penetration, the material still may not be ripped efficiently. In some cases, drilling and blasting may be required to induce sufficient fracturing to allow for excavation.

Seismic Velocities

Generally, seismic p-wave velocities less than 3,000 ft/s indicate native soil, fill material or highly weathered and/or decomposed rock, while velocities in excess of 10,000 ft/s indicate fresh (essentially non-weathered) rock. Seismic velocities between these two values typically indicate rock with varying degrees of weathering and/or fracturing. Consolidation and cementation, as well as, fracture spacing and density also affect the measured seismic velocities. Moderate velocities may indicate compacted soil, moderately weathered rock or loosely consolidated sediment such as gravel, sand and silt. Saturated sediment below the water table characteristically displays seismic velocities near or slightly above 5,000 ft/s.

Extremes in seismic velocities may range from below 1,000 ft/s to over 20,000 ft/s. Very low seismic velocities usually indicate highly weathered or poorly compacted material, either natural or man-made. Extremely high velocities are rare in the near-surface, and only possible in certain types of rock. Rock velocities are dependent on the physical condition of the rock masses evaluated. Seismic p-wave velocities are related to rock hardness, fracture density and sediment consolidation, saturation and cementation.

Findings

The results of this refraction seismic investigation are summarized by Figures 3 through 7. These seismic velocity sections, which were created through the inversion process, have very low error and provide a high degree of lateral definition of the seismic velocity horizons found beneath each line. The seismic velocity sections have been scaled from 1,000 ft/s to 16,000 ft/s for the velocity window. Horizontal and vertical axes have been scaled to 20 feet per inch in the horizontal and 10 feet per inch in the vertical. The seismic velocity scales are the same for all RS lines.

Each of the RS Lines measured seismic velocities in excess of 8,000 ft/s at some point along the line and each line encountered seismic velocities in which the Caterpillar Chart of Ripper Performance considers to be non-rippable rock, in this case, with a D10R dozer and a single shank. The depths to non rippable material according to CAT(seismic velocities greater than 7,800 ft/s) varies on each line, however, non-rippable velocities were measured as shallow as 3 feet below ground surface (bgs), as seen on the south end of RS Line 2 (Figure 4) and as deep as 30+ feet bgs on RS Line 1 (Figure 3).

<u>RS Line 1 (Figure 3)</u>

The seismic velocities measured along this line show a gradual gradation from the low to high velocities. Rippable material was measured along a majority of the line with difficult to marginally rippable velocities seen rising to the surface between stations 140 to 190. In general, rippable material is shown from ground surface to a depth of approximately 25 feet bgs on the southern end and around 15 feet bgs on the northern end of the line. Below these depths and between stations 140 to 190, rippability will be difficult to non-rippable and may require drilling and blasting to efficiently fracture the rock for excavation.

.

RS Line 2 (Figure 4)

RS Line 2 shows a gentle gradation of seismic velocities from ground surface to depths of around 20 feet bgs from stations 50 to 240. On the southern end (stations -20 to 50), measured velocities are nearing non-rippable levels at the ground surface and dip to the north. Velocities suggest rippable material, from station 50 to the north end of the line, to depths of 15 to 20 feet bgs. At the southern end of the line, difficult to non- rippable material will likely be encountered at the surface and may required alternative excavation methods.

RS Lines 3 (Figure 5)

This Line displays seismic velocities grading rapidly from ground surface to the maximum depth of exploration. The top 10 to 12 feet shows velocities within the range of rippable with conventional excavation methods. Below this depth, the velocities increase to difficult and non-rippable levels and will likely require drilling and blasting to break the rock for excavation, depending on the maximum depth of excavation.

RS Lines 4 & 5 (Figure6 and 7)

RS Lines 4 and 5 were acquired in a semi-perpendicular cross pattern. Both lines display similar velocity horizons over their lengths, with the exception of a belly in the moderate velocity horizon of 4,000 to 5,000 ft/s between stations 90 to 170 on RS Line 4. Rippable material on these two lines is from ground surface to approximately 12 to 18 feet bgs. Below this, velocities grade quickly to non-rippable material and will likely require drilling and blasting depending on the depth of excavation in the area.

Summary

This refraction seismic investigation revealed a high degree of variation in the calculated seismic velocities of the subsurface materials, with maximum seismic velocity values greater than 16,000 ft/s measured on Line 3 The average maximum measured seismic velocity was over 13,700 ft/s for all 5 RS Lines.

Low velocity material was encountered in the near surface which suggests highly to moderately high, weathered/fractured rock and soil and/or fill. The moderate velocities ranging from 3,000 ft/s to the 6,000 ft/s horizon, suggests rock with moderate fracturing and/or weathering. Again, based on our experience with the rock in this area, it is our estimation that difficult ripping or "marginally" rippable rock will be encountered near velocities of 6,000 ft/s and due to the massive nature of the rock on site, the non-rippable velocity is likely to be around 7,500 ft/s or less. Therefore, it should be expected that, depending on the maximum depth of excavation on this project, alternative excavation methods, such as drilling and blasting, will be required to break the rock for further excavation.

Warranty and Limitations

Gasch Geophysical Services, Inc. has performed these services in a manner which is consistent with standards of the profession. Site conditions can cause some variations of the calculated seismic velocities. Refraction seismic velocities assume that velocities increase with depth; therefore, a lower seismic velocity layer beneath a higher seismic velocity layer will not be resolved. No guarantee, with respect to the results and performance of services or products delivered for this project, is implied or expressed by Gasch Geophysical Services, Inc.

We trust that this is the information you require; however, should you have comments or questions, please contact our Rancho Cordova office at your convenience. Thank you for this opportunity to again be of service.

Sincerely,

GASCH GEOPHYSICAL SERVICES, INC.

Professional Geophysicist
Kent L. Gasch
No. 1061
State of California

Kent L. Gasch
Professional Geophysicist No. 1061

Site Location Map

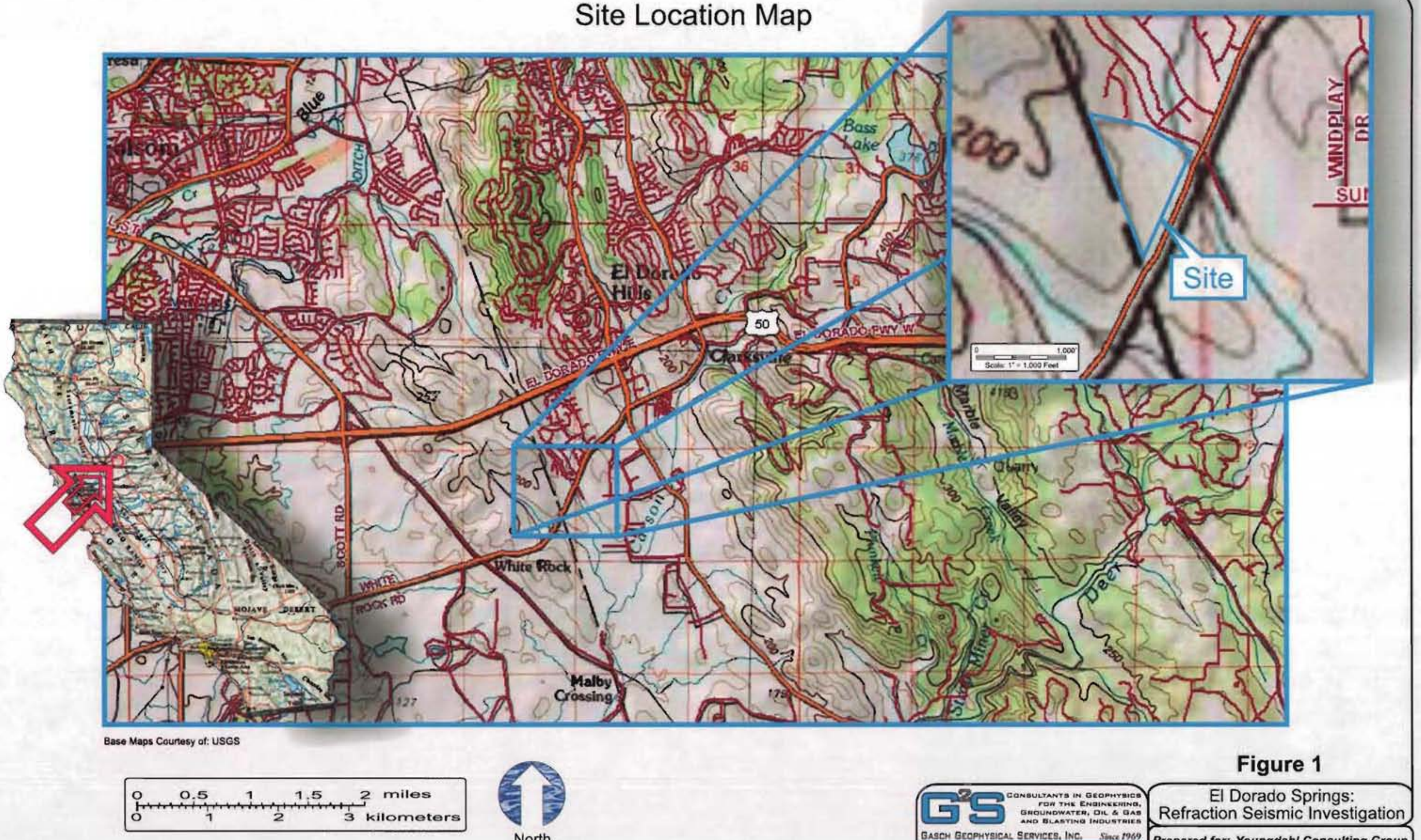
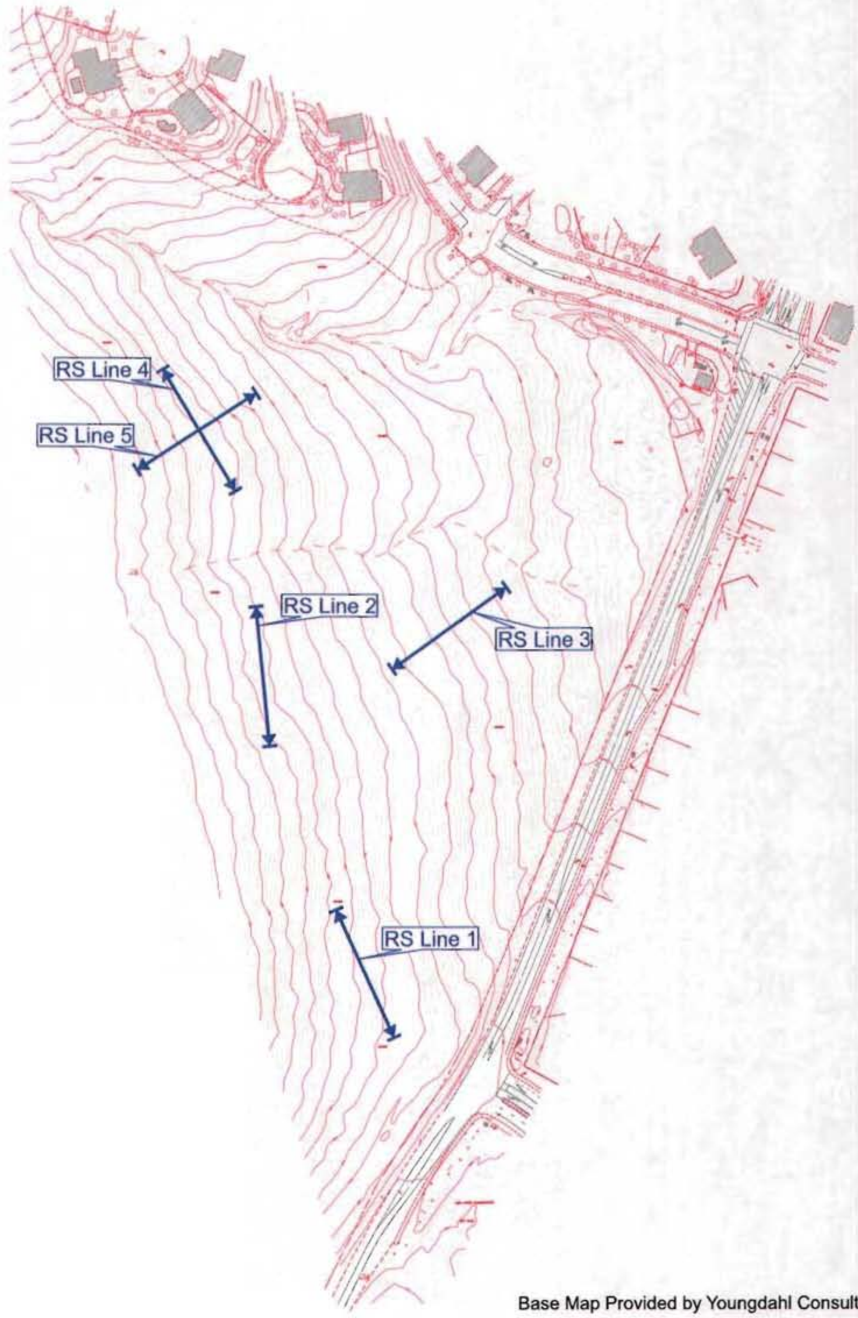


Figure 1

G³S CONSULTANTS IN GEOPHYSICS FOR THE ENGINEERING, GROUNDWATER, OIL & GAS AND BLASTING INDUSTRIES GASCH GEOPHYSICAL SERVICES, INC. Since 1969 WWW.GEOGASCH.COM 3174 Luyung Drive, Building #2 Rancho Cordova, California 95742 U.S.A. (916) 635-8906 • FAX (916) 635-8907	El Dorado Springs: Refraction Seismic Investigation
	***Prepared for:* Youngdahl Consulting Group**
	Project Number: 2013-20.01 ***Date:*** October, 2013

RS Line Location Map



Base Map Provided by Youngdahl Consulting Group, Inc.

Figure 2

0 100 200 300 400

Approximate Scale: 1" = 200' (approx.)

North

CONSULTANTS IN GEOPHYSICS FOR THE ENGINEERING, GROUNDWATER, OIL & GAS AND BLASTING INDUSTRIES

GASCH GEOPHYSICAL SERVICES, INC. *Since 1969*

WWW.GEOGASCH.COM

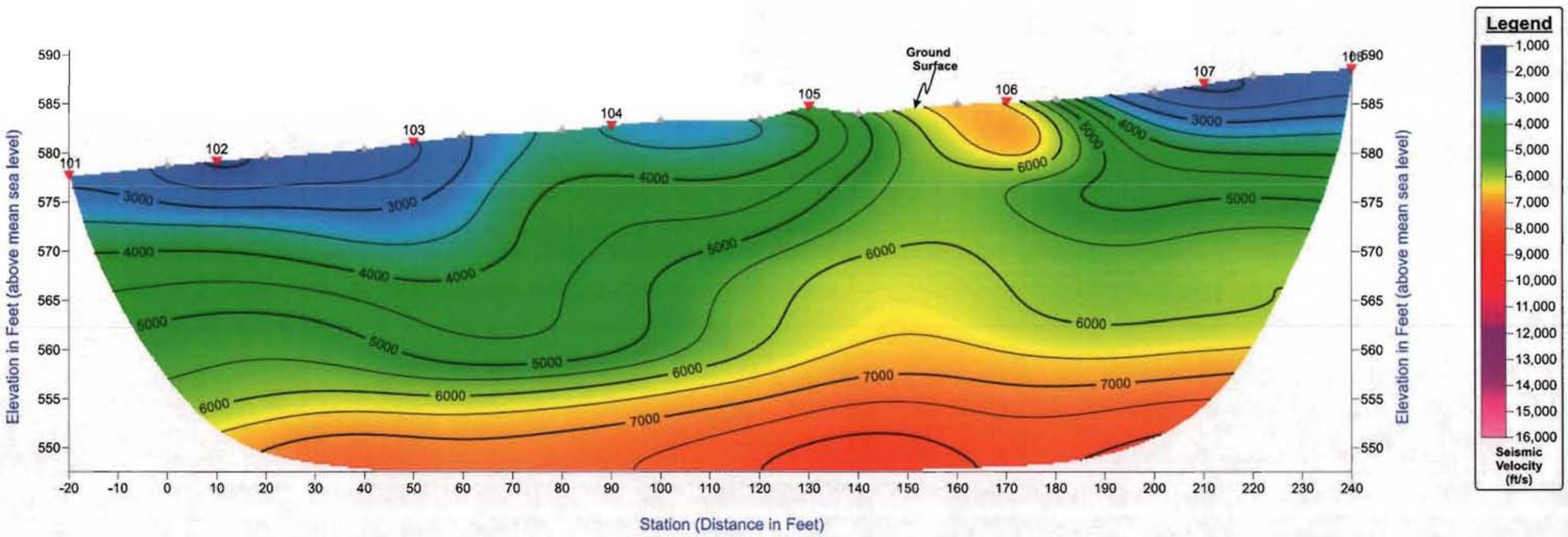
3174 Luyung Drive, Building #2
Rancho Cordova, California 95742 U.S.A.
(916) 635-8906 • FAX (916) 635-8907

Refraction Seismic Investigation: El Dorado Springs

Prepared for: Youngdahl Consulting Group

Project Number: 2013-20.01 ***Date:*** October, 2013

Seismic Velocity Section • RS Line 1



Scale:
Horizontal: 1" = 20'
Vertical: 1" = 10'
Geophone Station Interval = 20 feet

Legend
+ Geophone Station
101 ▼ Energy Source Locations

G²S Consultants in Geophysics for the Engineering, Groundwater, Oil & Gas and Blasting Industries
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www.geogasch.com
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Rancho Cordova, California 95742 U.S.A.
(916) 635-8906 • FAX (916) 635-8907

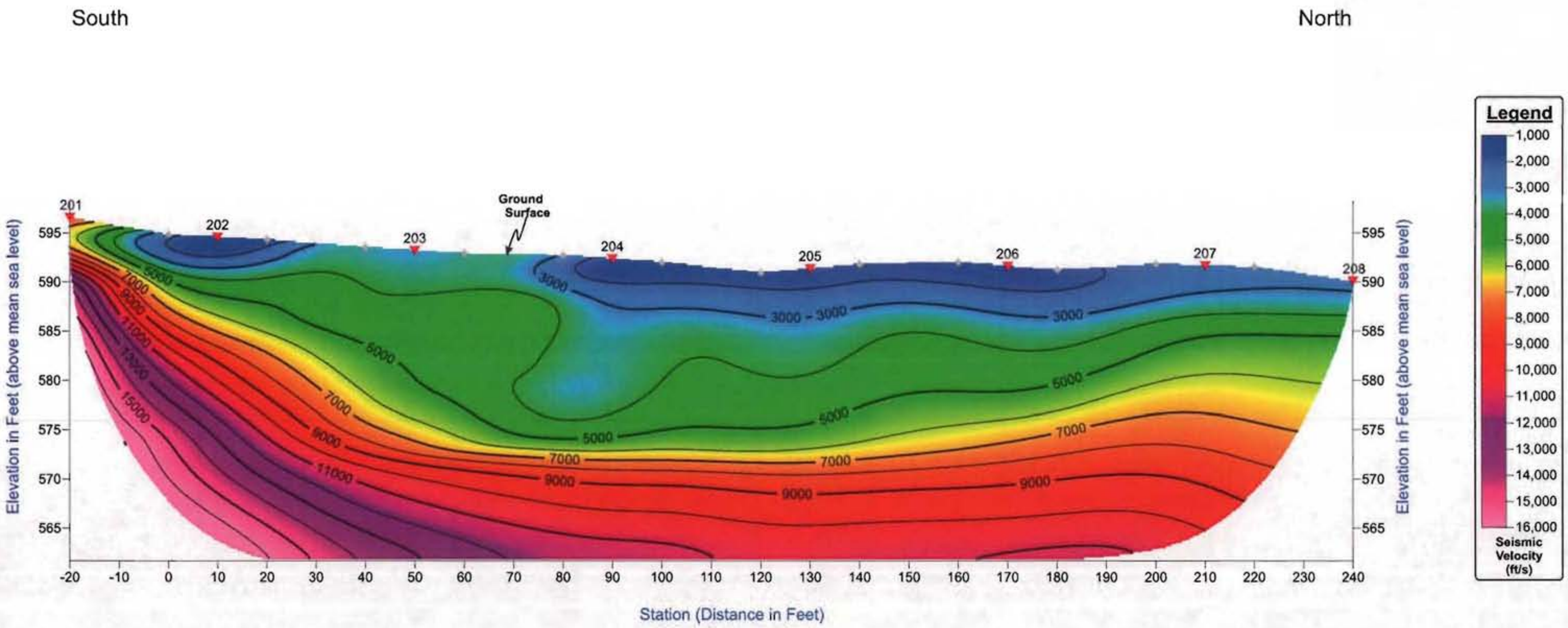
Figure 3

Refraction Seismic Investigation: El Dorado Springs

Prepared for: Youngdahl Consulting Group

Project Number: 2013-20.01 ***Date:*** October, 2013

Seismic Velocity Section • RS Line 2



Scale:
Horizontal: 1" = 20'
Vertical: 1" = 10'
Geophone Station Interval = 20 feet

Legend
Geophone Station
201 Energy Source Locations

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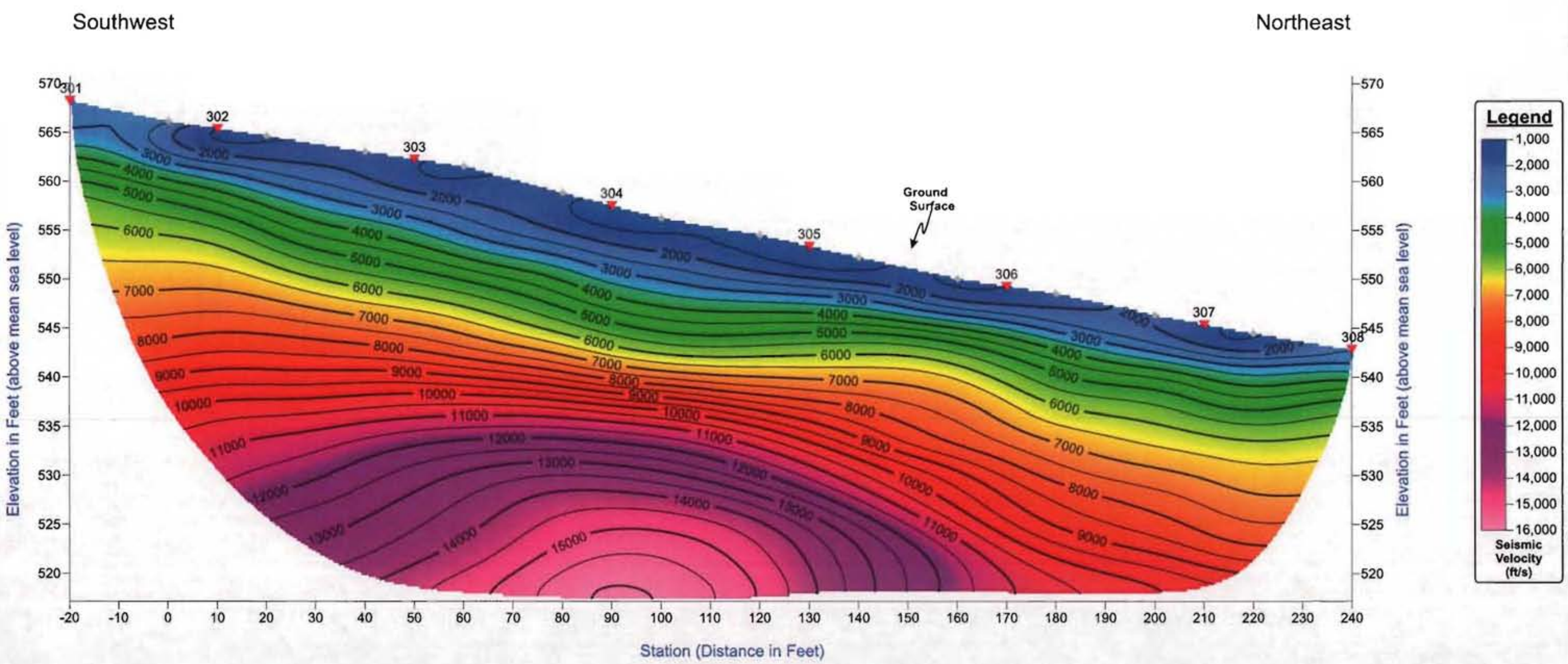
Figure 4

Refraction Seismic Investigation: El Dorado Springs

Prepared for: Youngdahl Consulting Group

Project Number: 2013-20.01 ***Date:*** October, 2013

Seismic Velocity Section • RS Line 3



Scale:
Horizontal: 1" = 20'
Vertical: 1" = 10'
Geophone Station Interval = 20 feet

Legend
Geophone Station
301 Energy Source Locations

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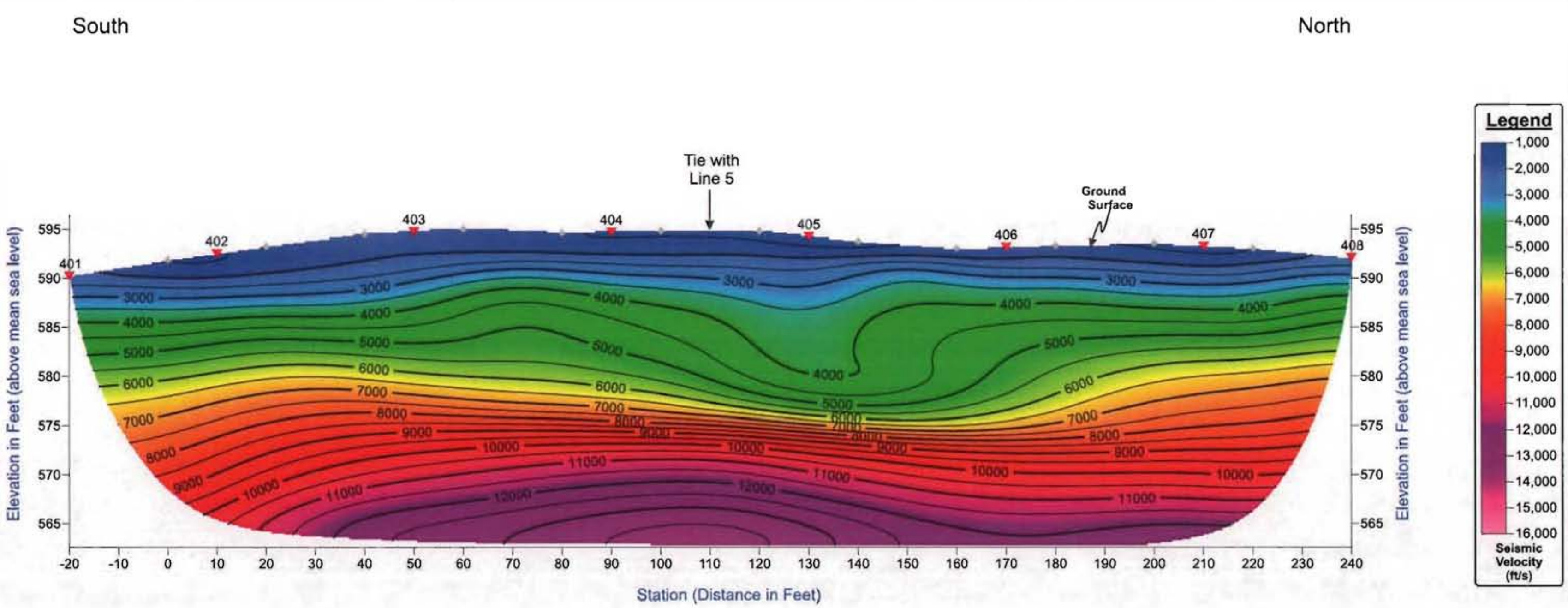
Figure 5

Refraction Seismic Investigation: El Dorado Springs

Prepared for: Youngdahl Consulting Group

Project Number: 2013-20.01 *Date:* October, 2013

Seismic Velocity Section • RS Line 4



Scale:
Horizontal: 1" = 20'
Vertical: 1" = 10'
Geophone Station Interval = 20 feet

Legend
Geophone Station
401 Energy Source Locations

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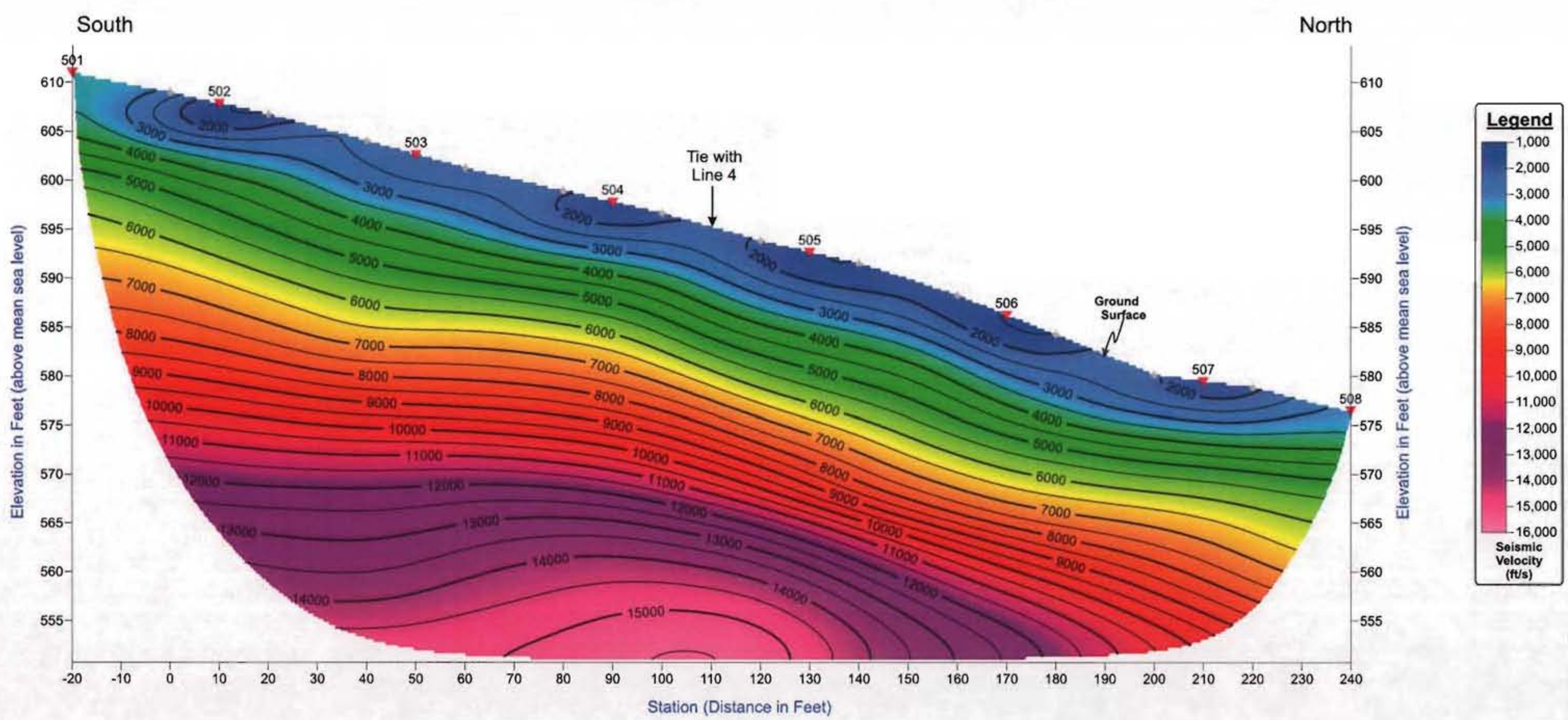
Figure 6

Refraction Seismic Investigation: El Dorado Springs

Prepared for: *Youngdahl Consulting Group*

Project Number: 2013-20.01 *Date:* October, 2013

Seismic Velocity Section • RS Line 5



Scale:
Horizontal: 1" = 20'
Vertical: 1" = 10'
Geophone Station Interval = 20 feet

Legend
Geophone Station
501 Energy Source Locations

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Figure 7

Refraction Seismic Investigation: El Dorado Springs

Prepared for:* *Youngdahl Consulting Group

Project Number: 2013-20.01 ***Date:*** October, 2013

Caterpillar D10R Ripper Performance Chart*

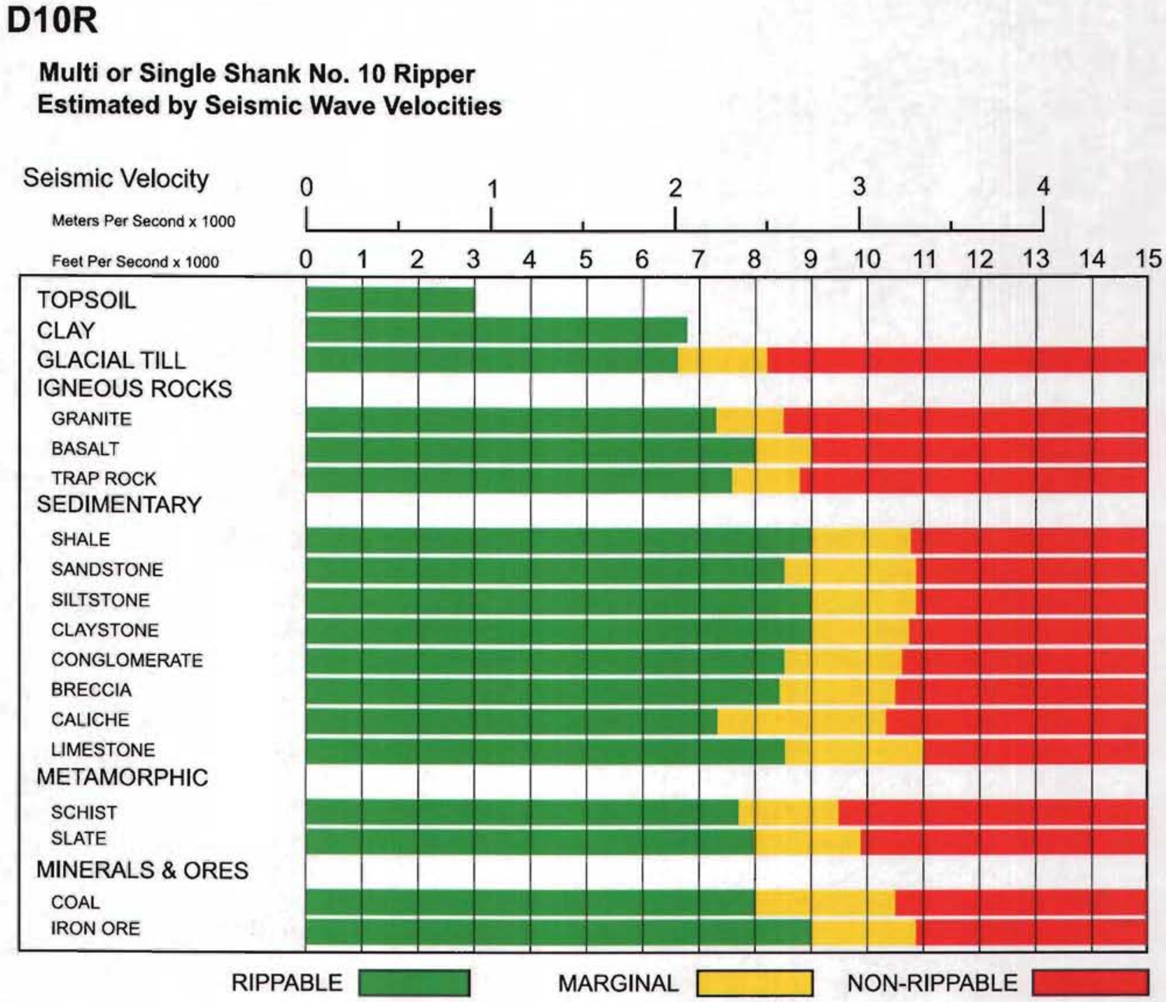

Figure 8

* Based on the Caterpillar Performance Handbook Edition 32 - October, 2001

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El Dorado Springs: Refraction Seismic Investigation

Prepared for: Youngdahl Consulting Group

Project Number: 2013-20.01 Date: October, 2013

DRAINAGE REPORT
FOR
EL DORADO SPRINGS 23

El Dorado Springs 23 is a 21.65 acre parcel located at the western boundary of El Dorado County, south of US Highway 50, on the north side of White Rock Road. The site is roughly triangular in shape. A steep, well-incised stream channel in the adjacent Springfield Meadows residential development forms the northern boundary. The project is bounded by White Rock Road on the southeast, and the Sacramento County line on the west. Site access is from White Rock Road.

Proposed development of El Dorado Springs 23 will create 49 single-family residential lots, as well as several lettered lots. Drainage improvements will include interceptor ditches along the western boundary and a network of in-tract storm drain pipes.

El Dorado Springs 23 is within the 15 square mile watershed covered by the 1996 *Carson Creek Regional Drainage Study* (*CCRDS*) prepared for DOT. The purpose of the *CCRDS* was to present a unified plan for stormwater management within the El Dorado County portion of the watershed, based on assessment of pre- and post-development runoff resulting from a 100-year, 24-hour design storm.

The El Dorado Springs 23 project comprises approximately 29% of shed area designated "CW5" in the *CCRDS,* shown on the accompanying Shed Map, Exhibit 1. The receiving channel for site runoff converges with Tributary 3 (to Carson Creek) at the project boundary, on the upstream side of the White Rock Road crossing. The total contributing area at this point (Sheds CW1-CW5) is approximately 640 acres; El Dorado Springs 23 accounts for less than 3.5% of the total watershed area. It is of significant note that the project is in the lowermost reach of the composite shed.

Detention storage can be an effective means for management of increased peak runoff resulting from project development. However, the size and location of detention should be evaluated with regard to its impact on the watershed at large. The effect of detention is to create a delay in peak runoff from its contributing area. Nonetheless, the delayed peak may actually result in higher flow in the receiving channel as it combines with runoff from additional upstream area.

Under post-development conditions, concentrated runoff will exit the El Dorado Springs 23 site at several locations, and flow into the adjacent channel. The local receiving channel has, over time, eroded to bedrock and developed a well-incised flow cross-section. Discharges from the developed site are not anticipated to cause any channel degradation or create additional flood hazard. The channel flows through open space controlled by the project's HOA, where localized flow increases which may occur during more frequent events will have no deleterious effects.

Inspection of the regional Shed Map suggests that inclusion of onsite detention in development plans for El Dorado Springs 23 is unlikely to be of benefit when considered beyond the limits of the project itself, at the White Rock Road crossing. In fact, it is intuitively clear that direct discharge into the receiving channel has the advantage of passing peak project runoff through the culvert prior to runoff from combined sheds CW1-CW5 reaching its peak.

ATTACHMENT 9

The foregoing suppositions are supported by the results of the *CCRDS.* The level of development applied to shed CW5 in the *CCRDS* analysis of post-development conditions was based on 2-4 residential units per acre over 50% of the shed. El Dorado Springs 23 may reach a slightly higher development density, but occurring on only 29% of the shed, and thus be in substantial agreement with the *CCRDS.* The regional analysis included no detention in Shed CW5. Downstream conditions were deemed adequate to handle design runoff under the assumed conditions. The project, as proposed, is consistent with the tenets of the *CCRDS.*

Analysis of a 2-year storm event for purposes of hydromodification would result in similar findings with respect to on-site detention and attendant peak flow attenuation. It is unlikely that project-specific detention would be beneficial when considered on a regional basis, as outlined above. However, water quality treatment features may result in incidental detention during small, frequent events. The channel adjacent to El Dorado Springs 23, which is the receiving drainageway for site runoff, is eroded to bedrock and therefore has minor potential for further degradation. Moderate increases in site runoff that may occur post-development during a 2-year storm would affect a very short channel reach, which flows through commonly-owned open space.

More detailed drainage analysis will accompany project Improvement Plans. The subsequent drainage report, submitted for County approval, will provide the appropriate level of analysis to support the findings stated herein. Water quality considerations will be addressed at this stage, as outlined in Attachment 1 hereto.

ATTACHMENT 1

State Water Resource Control Board Compliance

SWRCB requires all MS4 Permitees to comply with storm water discharge permit requirements for long term post construction practices that protect water quality and control runoff flow. As a minimum all discretional projects shall incorporate, either a volumetric or flow based treatment control design standard, or both, as identified below to mitigate (infiltrate, filter or treat) storm water runoff:

Volumetric Treatment Control BMP

1. The 85th percentile 24-hour runoff event determined as the maximized capture storm water volume for the area, from the formula recommended in Urban Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87, (1998); or
2. The volume of annual runoff based on unit basin storage water quality volume, to achieve 80 percent or more volume treatment by the method recommended in California Stormwater Best Management Practices Handbook; or
3. The volume of runoff produced from a historical-record based reference 24-hour rainfall criterion for "treatment" that achieves approximately the same reduction in pollutant loads achieved by the 85th percentile 24-hour runoff event.

Flow Based Treatment Control BMP

1. The flow of runoff produced from a rain event equal to at least two times the 85th percentile hourly rainfall intensity for the area; or
2. The flow of runoff produced from a rain event that will result in treatment of the same portion of runoff as treated using volumetric standards above.

Bio Swale Recommendations

For the water quality treatment purposes, the flow rate to be treated is defined as a The Water Quality Flow and to be used for filtering types of treatment control devices. The value of rainfall intensity was used in Rational Method Formula to generate runoff from areas, which would flow to the filtering treatment devices is 0.16 in/hr (for elevations below 1000 feet).

Below are preliminary recommendations for vegetative swales characteristics to treat required WQF:

Trapezoidal x-section of 3 feet bottom and 3:1 slopes.

Max depth is 6"; Time of contact is 7.5 min; C=1, n=0.24 per Table 2.4.3 (EDC Drainage Manual). C was derived from composite curve numbers (CN_{comp}) and time of concentration for corresponding sheds.

Bio Swale Characteristics for Water Quality Flow									
SHED	C	I (in/hr)	A (ac)	Q_{10} (cfs)	WQF (cfs)	S (%)	V (f/s)	Required L (lf)	Available L (lf)
C2	1	0.16	8.25	15.6	1.32	3.5	0.59	266	513
C3	1	0.16	3	5.7	0.48	1.00	0.28	126	247
D	1	0.16	6.31	11.9	1.01	3.50	0.54	243	455
E	1	0.16	2.96	5.6	0.47	6.00	0.5	225	450

The final water quality methods and details will be worked out at improvement plans stage and might change based on the final design.

The following Treatment Control BMPs also may be incorporated into final design of the project if a project proponent would like to reduce WQF requirements:

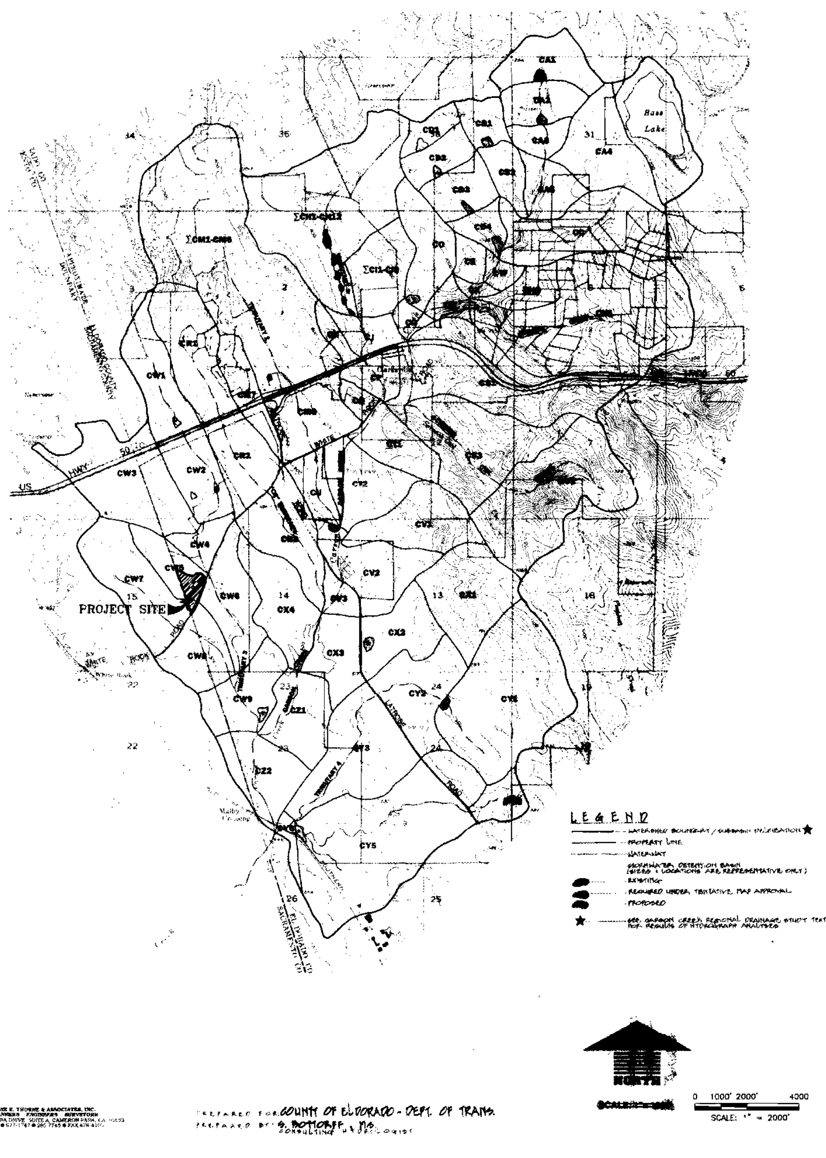
1. Incorporation within the site's plan or design, land use planning measures to minimize water quality impacts, including stream buffers and restoration activities.
2. Reduction of the site's imperviousness, conserving natural resources and areas, maintaining and using natural drainage courses in the storm water conveyance system and minimizing clearing and grading.
3. When landscaping is required or proposed, provision of runoff storage measures dispersed uniformly throughout the site's landscape with the use of a variety of detention, retention, and runoff practices.
4. Implementation of on-site hydrologically functioning landscape design and management practices.
5. Minimize project's impervious footprint and conserve natural areas. Minimize directly connected impervious areas.
6. Where landscaping is proposed in or adjacent to parking areas, to the extent feasible, incorporate landscaped areas into a site drainage design that minimizes runoff.

EXHIBIT 1

DRAINAGE REPORT FOR
EL DORADO SPRINGS 23
TENTATIVE MAP SUBMITTAL
SEPTEMBER, 2014

CARSON CREEK
REGIONAL DRAINAGE STUDY
BASE MAP

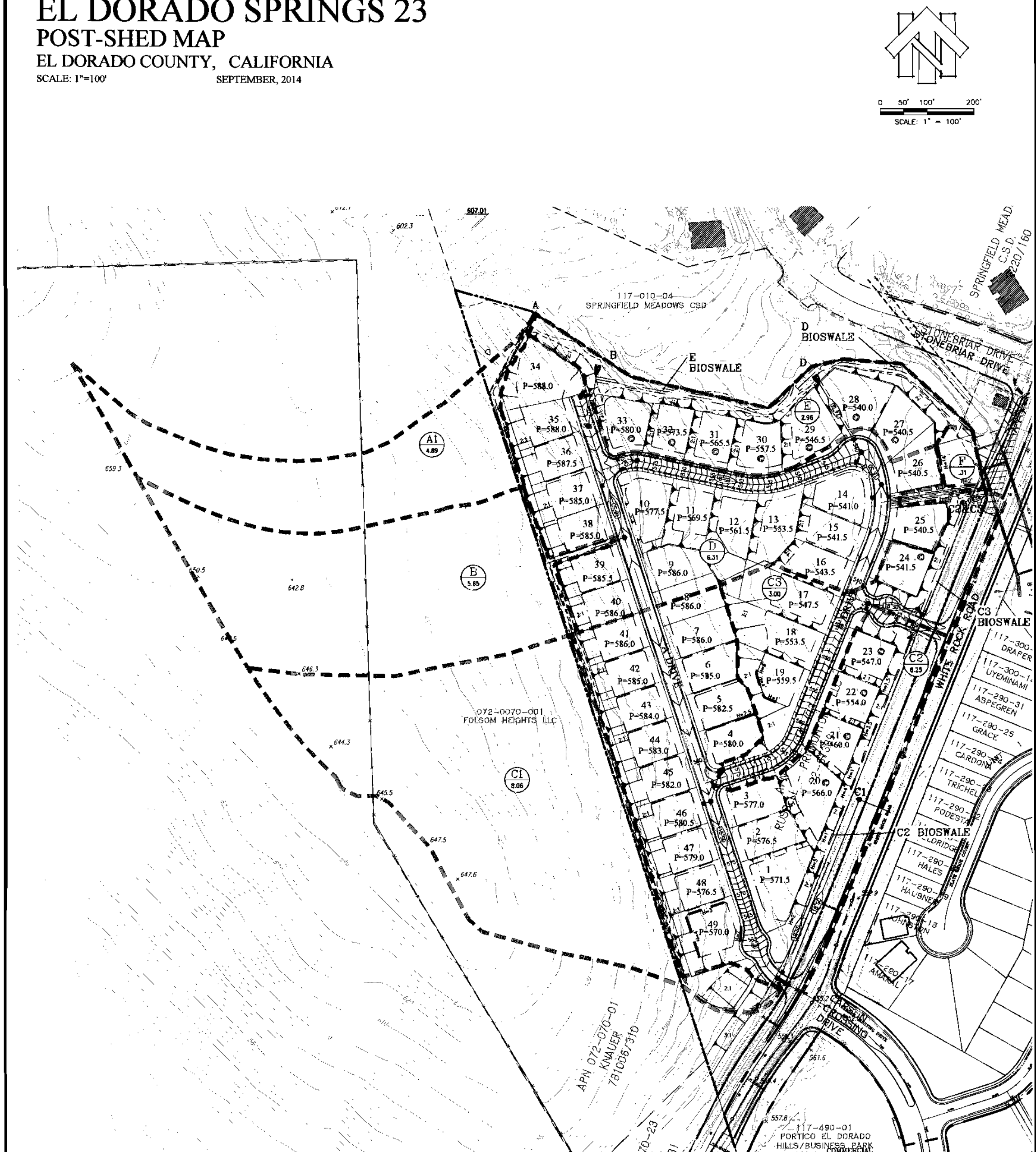
APRIL, 1996



cta Engineering & Surveying
Civil Engineering • Land Surveying • Land Planning

EL DORADO SPRINGS 23
POST-SHED MAP
EL DORADO COUNTY, CALIFORNIA

SCALE: 1"=100' SEPTEMBER, 2014



LEGEND:

SHED BOUNDARY

PROPOSED DITCH

SHED I.D. & AREA in ACRES

NOTE:

THE FINAL WATER QUALITY METHODS AND DETAILS WILL BE WORKED OUT AT IMPROVEMENT PLAN STAGE AND MAY CHANGE BASED ON THE FINAL DESIGN.

cta Engineering & Surveying

Civil Engineering • Land Surveying • Land Planning

3233 Monier Circle, Rancho Cordova, CA 95742

Environmental Noise Analysis

El Dorado Springs Subdivision

El Dorado County, California

BAC Job # 2013-094

Prepared For:

Standard Pacific Homes

Attn: Mike Carson
3650 Industrial Boulevard, Suite 140
West Sacramento, California 95691

Prepared By:

Bollard Acoustical Consultants, Inc.

Paul Bollard

Paul Bollard, President

March 28, 2014

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ATTACHMENT 10

3551 Bankhead Road < Loomis, CA 95650 < Phone: (916) 663-0500 < Fax: (916) 663-0501 < BACNOISE.COM

Introduction

Bollard Acoustical Consultants, Inc. was retained by the project applicant to prepare this noise study for the proposed El Dorado Springs Subdivision. The El Dorado Springs Subdivision project is located in the western portion of El Dorado County, in the unincorporated community of El Dorado Hills. Specifically, this analysis evaluates the effects of traffic noise generated by White Rock Road, as well as noise generated by the existing lift station just north of the project site, on the proposed El Dorado Springs Subdivision project. The project area and site plan are shown on Figures 1 and 2, respectively.

El Dorado County Noise Standards

The Noise Element of the El Dorado County General Plan contains policies to ensure that County residents are not subjected to noise beyond acceptable levels.

Policy 6.5.1.1 of the County Noise Element requires an acoustical analysis for new residential developments located in potentially noise-impacted areas.

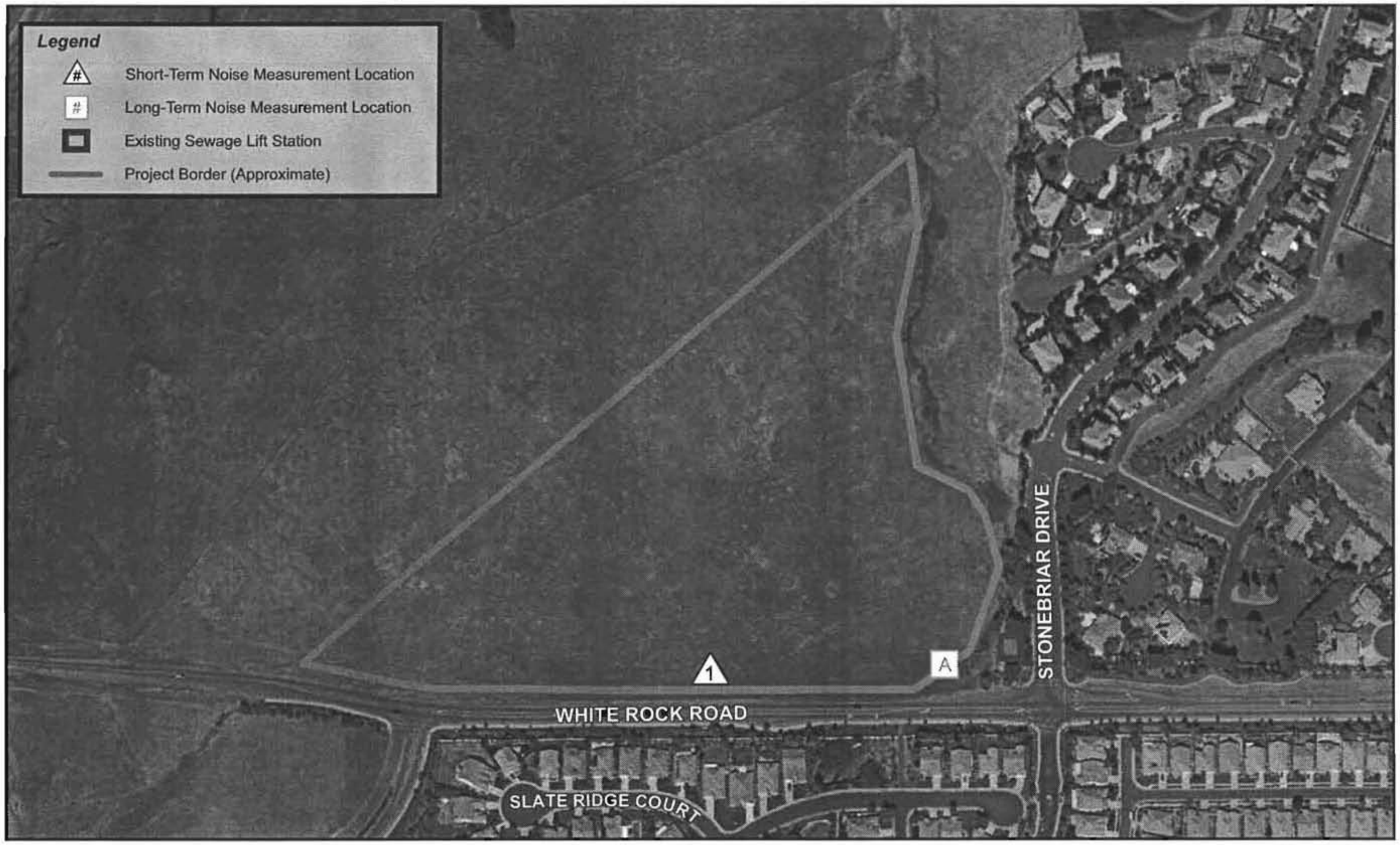
Policy 6.5.1.2 states that where proposed non-transportation noise sources are likely to produce noise levels exceeding the performance standards of Table 1 at existing or planned residential uses, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.

Policy 6.5.1.3 states that where noise mitigation measures are required to achieve the County's exterior noise standards, the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project and the noise barriers are not incompatible with the surroundings.

Policy 6.5.1.7 states that noise created by new non-transportation noise sources shall be mitigated so as not to exceed any of the noise level standards of Table 1, as measured immediately within the property line of the receiving property.

Policy 6.5.1.8 establishes 45 and 60 dB L_{dn} as being acceptable interior and exterior noise levels, respectively, for new residential uses affected by traffic noise sources. Where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dn} or less using a practical application of the best available noise reduction measures, an exterior noise level of up to 65 dB L_{dn} may be allowed provided that available exterior noise reduction measures have been implemented and interior noise levels are in compliance with the 45 dB L_{dn} standard.

Figure 1
El Dorado Springs Subdivision - El Dorado County, California
Project Area and Ambient Noise Measurement Locations



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Scale (feet)
0 200 400

Figure 2
El Dorado Springs Subdivision - El Dorado County, California
Proposed Project Site Plan

Table 1
Performance Standards for Non-Transportation Noise Sources
El Dorado County Noise Element – Community Areas

Noise Level Descriptor	Daytime (7 a.m. - 7 p.m.)	Evening (7 p.m. - 10 p.m.)	Nighttime (10 p.m. - 7 a.m.)
Hourly L_{eq}, dB	55 dB	50 dB	45 dB
Maximum Level, dB	70 dB	60 dB	55 dB

Note: Each of the noise levels specified above should be lowered by 5 dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises.

Please refer to Appendix A for definitions of acoustical terminology.

Existing Ambient Noise Environment

The noise environment in the project vicinity is primarily defined by traffic noise emanating from White Rock Road. To quantify existing ambient noise levels in the project area, BAC conducted long-term and short-term noise surveys at the locations shown on Figure 1 on August 6-7, 2013. Larson-Davis Laboratories (LDL) 820 precision integrating sound level meters were used to complete the noise level measurement survey. The meters were calibrated before use with a LDL Model CAL200 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). The noise level measurement results are summarized below in Table 2. The detailed long-term monitoring results conducted at Site A are provided in Appendices B and C.

Table 2
Summary of Ambient Noise Level Measurements
El Dorado Springs Subdivision – November 7, 2013

			Daytime			Nighttime		
Site	Date	L_{dn}	L_{eq}	L_{50}	L_{max}	L_{eq}	L_{50}	L_{max}
1[1]	November 6, 2013 – 11:14 AM	--	61	--	70	--	--	--
A[2]	November 7, 2013	64	61	57	72-85	57	43	70-75

Notes:
[1] Short-term noise level measurement location, 15 minute duration. 75 feet from White Rock Road centerline.
[2] Long-term noise level measurement location, 24 hour duration. 110 feet from White Rock Road centerine.
Source: Bollard Acoustical Consultants, Inc.

Noise Generated by Nearby Lift Station

The lift station was operating normally during a BAC site inspection conducted on November 6, 2013, and noise generated by the electric pumps in use at that station were inaudible at the project site. During emergency power outage conditions, a diesel generator located within the lift-station structure would provide the necessary power for lift-station operations. Because such conditions would be considered "emergency operations", the noise generation of the diesel generator during such operations would normally be exempt from County noise requirements. Nonetheless, sound-control measures have been incorporated in the design of this lift-station, including apparent cooling air inlet and exhaust silencers, and an engine exhaust muffler. As a result, during brief periods when the generator would be in operation for either an emergency power outage or routine testing, generator noise levels are not expected to cause exceedance of the County noise standards or result in adverse noise impacts at the El Dorado Springs Subdivision.

Evaluation of Future White Rock Road Traffic Noise Levels

Traffic Noise Prediction Methodology

The Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA-RD-77-108) with the Calveno vehicle noise emission curves was used to predict traffic noise levels at the project site.

Traffic Noise Prediction Model Calibration

The FHWA Model provides reasonably accurate traffic noise predictions under "ideal" roadway conditions. Ideal conditions are generally considered to be long straight roadway segments with uniform vehicle speeds, a flat roadway surface, good pavement conditions, a statistically large volume of traffic, and an unimpeded view of the roadway from the receiver location. Such conditions did not appear to be in effect at this project site. As a result, Bollard Acoustical Consultants, Inc. conducted a careful calibration of the FHWA Model through site-specific traffic noise level measurements and concurrent traffic counts.

This calibration process was performed at one location on the project site on November 6th, 2013. The traffic noise measurement location, Site 1, is shown on Figure 1. The detailed results of this procedure are provided in Appendix D. The FHWA Model was found to reasonably predict traffic noise levels at the measurement site. As a result, no calibration adjustment was applied to the FHWA Model for the prediction of future traffic noise levels at the project site.

Predicted Future Exterior Traffic Noise Levels at Outdoor Activity Areas

The FHWA Model was used with future traffic data to predict future traffic noise levels at the proposed outdoor activity areas of the project residences which are located adjacent to White Rock Road. Future traffic volume forecasts for White Rock Road were obtained from El Dorado County Traffic Model. The FHWA Model inputs and predicted future traffic noise levels at the project site are shown in Appendix E. The predicted future traffic noise levels are summarized below in Table 3.

Table 3
Predicted Future Traffic Noise Levels at Lots Nearest to White Rock Road
El Dorado Springs Subdivision – El Dorado County, California

Roadway	L_{dn} @ Nearest Residences	Distance to Future L_{dn} Contours (feet from Roadway Centerline)	
		65 dB L_{dn}	60 dB L_{dn}
White Rock Road	66	113	243

Note: A complete listing of FHWA Model inputs and results are provided in Appendix E.

The Table 3 data indicate that future traffic noise levels are predicted to exceed the 60 dB L_{dn} exterior noise level standard applied by El Dorado County to the outdoor activity areas of new residential developments. Specifically, future traffic noise levels in the backyards of the lots located nearest to White Rock Road are predicted to be approximately 66 dB L_{dn}. Because the predicted exterior noise levels along White Rock Road exceed the County's criteria, a more specific analysis of potential noise impacts at the residences located adjacent to White Rock Road was prepared.

Traffic Noise Barrier Analysis

An analysis of noise barrier effectiveness was performed for this project and is summarized below in Table 4 for representative backyard areas. The detailed results of the noise barrier effectiveness are provided as Appendix F.

Table 4
Barrier Analysis Results
El Dorado Springs Subdivision – El Dorado County, California

Barrier Height (feet)	Predicted L_{dn} (dB) at Proposed Outdoor Activity Areas
No barrier	66
6	60
7	59
8	58
9	56
10	56

Note: A complete listing of FHWA Model Noise Barrier Effectiveness inputs and results are provided in Appendix F.

As shown above in Table 4, the barrier analysis results indicate that a 6-foot wall constructed at the locations shown in Figure 2 would be adequate to achieve compliance with the County's exterior noise standard (60 dB L_{dn}).

Interior Noise Levels within Residences Located Adjacent to White Rock Road

With construction of the proposed the White Rock Road noise barrier, future traffic noise levels are not predicted to exceed 60 dB L_{dn} at the exterior first-floor facades of residences constructed along White Rock Road. Due to reduced ground absorption at elevated positions, and lack of shielding by barriers at upper floor areas, second-floor facade exterior noise levels are predicted to be approximately 68 dB L_{dn}. Based on this level, a building facade noise level reduction of 23 dB would be required to achieve an interior noise level of 45 dB L_{dn} within second-floor rooms, and 15 dB of noise level reduction would be required for first-floor facades.

Standard residential construction (wood or stucco siding, STC-27 windows, door weather-stripping, exterior wall insulation, composition plywood roof), results in an exterior to interior noise reduction of 25 dB with windows closed and approximately 15 dB with windows open. Therefore, standard construction would be acceptable for this project at all residences of this development. Nonetheless, mechanical ventilation should be provided to allow occupants to close doors and windows as desired for acoustical isolation.

Conclusions

The El Dorado Springs Subdivision project site will be exposed to future White Rock Road traffic noise levels in excess of El Dorado County 60 dB L_{dn} exterior noise level standard for new residential developments. The following specific noise mitigation measures are recommended to achieve compliance with the County's noise standards:

- A 6-foot tall barrier would be required to reduce future traffic noise levels to approximately 60 dB L_{dn} or less in the backyards located adjacent to White Rock Road.

- Suitable materials for the traffic noise barriers include masonry and precast concrete panels. Other materials may be acceptable but should be reviewed by an acoustical consultant prior to use.

- Mechanical ventilation (air conditioning) should be provided for all residences in this development to allow the occupants to close doors and windows as desired to achieve compliance with the applicable interior noise level criteria.

These conclusions are based on the White Rock Road traffic assumptions cited in Appendix E and on noise reduction data for standard residential dwellings. Deviations from the Appendix E data, or the project site plan shown in Figure 2, could cause future traffic noise levels to differ from those predicted in this analysis. In addition, Bollard Acoustical Consultants, Inc. is not responsible for degradation in acoustic performance of the residential construction due to poor construction practices, failure to comply with applicable building code requirements, or for failure to adhere to the minimum building practices cited in this report.

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.

Loudness A subjective term for the sensation of the magnitude of sound.

Masking The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) 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.

RT_{60} 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.

SEL A rating, in decibels, of a discrete event, such as an aircraft flyover or train passby, that compresses the total sound energy of the event into a 1-s time period.

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.

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Appendix B

El Dorado Springs Subdivision
24hr Continuous Noise Monitoring at Site A
Thursday, November 07, 2013

Hour	Leq	Lmax	L50	L90
0:00	54	73	38	31
1:00	54	75	35	30
2:00	52	70	36	32
3:00	56	74	41	34
4:00	58	75	47	35
5:00	56	74	45	36
6:00	62	73	59	47
7:00	64	74	62	57
8:00	62	75	59	50
9:00	60	85	54	42
10:00	57	73	52	42
11:00	58	75	54	44
12:00	59	75	55	43
13:00	57	72	54	43
14:00	59	76	56	46
15:00	62	79	60	51
16:00	64	80	62	54
17:00	65	83	64	56
18:00	63	83	60	52
19:00	60	74	57	47
20:00	59	75	54	43
21:00	58	79	51	40
22:00	57	74	47	34
23:00	53	71	38	32

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	65.1	57.0	61.2	62.1	52.4	56.9
Lmax (Maximum)	84.7	71.8	77.0	74.8	70.1	73.1
L50 (Median)	63.6	50.9	56.9	58.7	34.7	42.7
L90 (Background)	56.8	39.6	47.3	46.9	30.5	34.6

Computed Ldn, dB	64.3
% Daytime Energy	82%
% Nighttime Energy	18%

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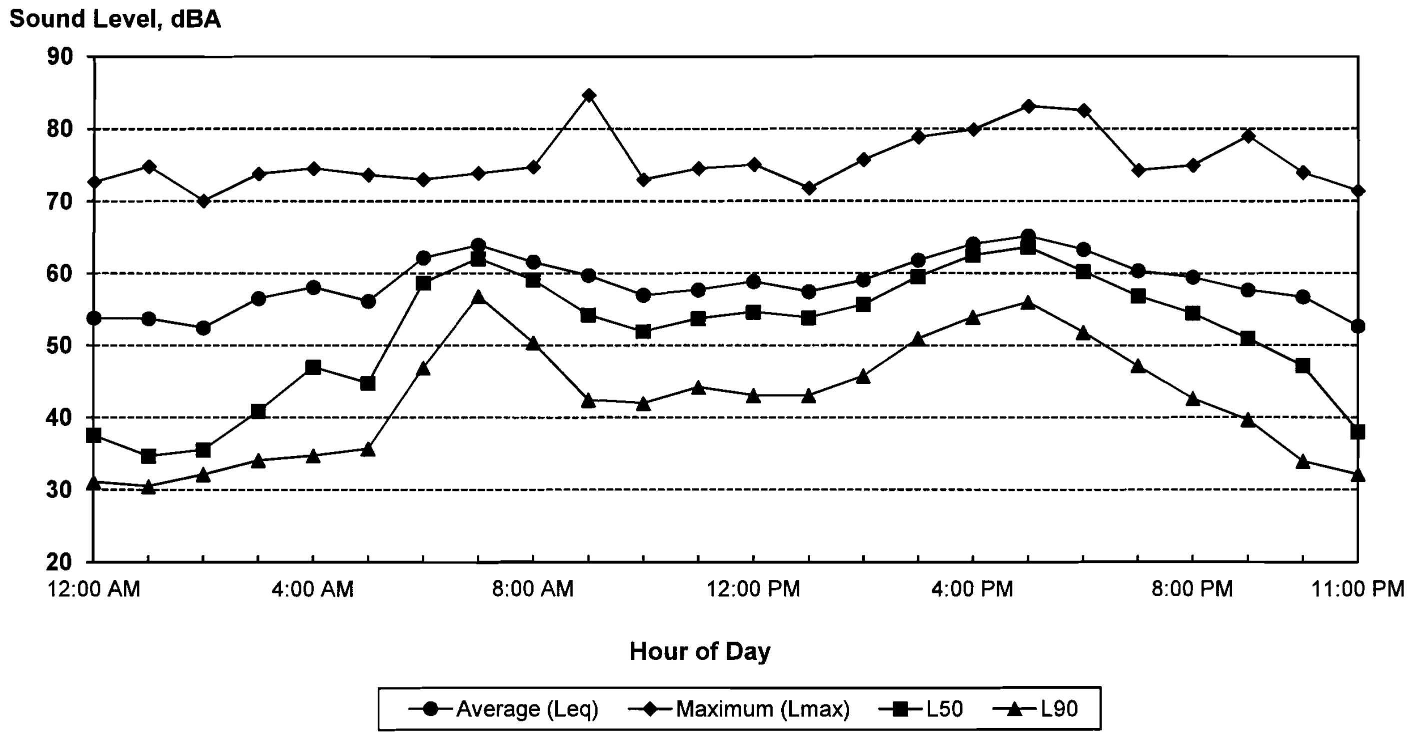
Appendix C
El Dorado Springs Subdivision
24hr Continuous Noise Monitoring at Site A
Thursday, November 07, 2013



Ldn: 64 dB

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Appendix D

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

Project Information:	Job Number:	2013-094
	Project Name:	El Dorado Springs Subdivision
	Roadway Tested:	White Rock Road
	Test Location:	Site 1
	Test Date:	November 6, 2013
Weather Conditions:	Temperature (Fahrenheit):	69
	Relative Humidity:	26%
	Wind Speed and Direction:	WSW 3 MPH
	Cloud Cover:	Clear
Sound Level Meter:	Sound Level Meter:	LDL Model 820 (BAC #9)
	Calibrator:	LDL Model CAL200
	Meter Calibrated:	Immediately before
	Meter Settings:	A-weighted, slow response
Microphone:	Microphone Location:	On project site
	Distance to Centerline (feet):	75
	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:	2
	Posted Maximum Speed (mph):	50
Test Parameters:	Test Time:	11:14 AM
	Test Duration (minutes):	15
	Observed Number Automobiles:	107
	Observed Number Medium Trucks:	0
	Observed Number Heavy Trucks:	0
	Observed Average Speed (mph):	50
Model Calibration:	Measured Average Level (L_{eq}):	60.5
	Level Predicted by FHWA Model:	61.3
	Difference:	***0.8 dB***

Conclusions:

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Appendix E

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

Project Information:

Job Number:	2013-094
Project Name:	El Dorado Springs Subdivision
Roadway Name:	White Rock Road

Traffic Data:

Year:	Future
Average Daily Traffic Volume:	15,000
Percent Daytime Traffic:	83
Percent Nighttime Traffic:	17
Percent Medium Trucks (2 axle):	1
Percent Heavy Trucks (3+ axle):	1
Assumed Vehicle Speed (mph):	50
Intervening Ground Type (hard/soft):	**Soft**

Traffic Noise Levels:

				L_{dn}, dB			
Location:	**Description**	**Distance**	**Offset (dB)**	**Autos**	**Medium Trucks**	**Heavy Trucks**	**Total**
1	Lots nearest to White Rock Road	95	0	65	53	57	66

Traffic Noise Contours (No Calibration Offset):

L_{dn} Contour, dB	Distance from Centerline, (ft)
75	24
70	52
65	113
60	243

Notes:

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Appendix F

FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Barrier Effectiveness Prediction Worksheet

Project Information:

Job Number: 2013-094
Project Name: El Dorado Springs Subdivision
Roadway Name: White Rock Road
Location(s): Lots nearest to White Rock Road

Noise Level Data:

Year: Future
Auto L_{dn}, dB: 65
Medium Truck L_{dn}, dB: 53
Heavy Truck L_{dn}, dB: 57

Site Geometry:

Receiver Description: Lots nearest to White Rock Road
Centerline to Barrier Distance (C_1): 80
Barrier to Receiver Distance (C_2): 15
Automobile Elevation: 0
Medium Truck Elevation: 2
Heavy Truck Elevation: 8
Pad/Ground Elevation at Receiver: 0
Receiver Elevation[1]: 5
Base of Barrier Elevation: 0
Starting Barrier Height 6

Barrier Effectiveness:

Top of Barrier Elevation (ft)	Barrier Height[2] (ft)	L_{dn}, dB Autos	Medium Trucks	Heavy Trucks	Total	Barrier Breaks Line of Sight to... Autos?	Medium Trucks?	Heavy Trucks?
6	6	59	47	52	**60**	Yes	Yes	Yes
7	7	58	46	51	**59**	Yes	Yes	Yes
8	8	57	45	50	**58**	Yes	Yes	Yes
9	9	55	43	49	**56**	Yes	Yes	Yes
10	10	55	42	48	**56**	Yes	Yes	Yes
11	11	54	42	47	**55**	Yes	Yes	Yes
12	12	53	41	46	**54**	Yes	Yes	Yes
13	13	52	40	45	**53**	Yes	Yes	Yes
14	14	51	39	44	**52**	Yes	Yes	Yes

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

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