STAFF USE ONLY

PROJECT NUMBER: *R2009-02089*
CASES: *RCUPT200900158*
RENVT200900128

*** * * * INITIAL STUDY * * * ***

COUNTY OF LOS ANGELES
DEPARTMENT OF REGIONAL PLANNING

GENERAL INFORMATION

I.A. Map Date: *July 30, 2010* Staff Member: *Anthony Curzi*

Thomas Guide: *Pg. H (LA County 62nd Ed.)* USGS Quad: *Neenach School Quadrangle*

Location:

Between Avenue B and C and 210th and 220th Street West, northwest of Lancaster

Description of Project:

The Alpine Solar Project includes the construction of a 92-megawatt (MW) solar photovoltaic (PV) energy facility on approximately 580 acres of the 800-acre site. The Project is described in more detail below.

Gross Acres: *800*

Environmental Setting:

The Alpine Solar Project site is located in a rural area of the Antelope Valley in the northern portion of Los Angeles County. The nearest rural residential communities are Neenach, located approximately 3 miles from the western boundary of the Project site, and Antelope Acres, located approximately 10 miles from the eastern boundary of the Project site. The closest residence is approximately 4,000 feet from the western boundary. The largest communities in the vicinity of the Project site include Rosamond, approximately 18 miles to the northeast, and Lancaster, approximately 20 miles to the southeast. Recreational opportunities in the area include the Los Angeles County Desert Pines Wildlife Sanctuary approximately 4 miles to the south, the Arthur B. Ripley Desert Woodland State Park approximately 3 miles to the south, and the Antelope Valley Poppy Preserve State Park approximately 7 miles to the southeast. Major transportation facilities include State Route (SR) 14 (north-south); SR 138/Avenue D (east-west); and several public, private, and military airports.

The Project site is generally bounded by West Avenue B to the north, West Avenue C to the south, 220th Street West to the west, and 200th Street West to the east. The Western and Eastern Parcels are approximately 0.5 mile apart. The Project location is depicted in the Site Plan.

Zoning: *A-2, Heavy Agriculture*

General Plan: *N-1, Non-Urban*

Community/
Areawide Plan: *Antelope Valley Areawide Plan*

Major Projects in Area: California Environmental Quality Act (CEQA) Guidelines (§15130[b][1]) recommend two methodologies for establishing the cumulative impact scenario. This document relies on the approach described in §15130[b][1][A], which uses "a list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency" (§15130[b][1][A]). Figure CUMULATIVE-1 shows the cumulative projects in relationship to the Alpine Solar Project. Appendix A provides a table of the cumulative projects.

REVIEWING AGENCIES

Responsible Agencies	Special Reviewing Agencies	Regional Significance
☐ None	☐ None	☐ None
☒ Regional Water Quality Control Board	☐ Santa Monica Mountains Conservancy	☐ SCAG Criteria
☐ Los Angeles Region	☐ National Parks	☒ Air Quality
☒ Lahontan Region	☐ National Forest	☐ Water Resources
☐ Coastal Commission	☐ Edwards Air Force Base	☐ Santa Monica Mtns. Area
☐ Army Corps of Engineers	☐ Resource Conservation District of Santa Monica Mtns. Area	☐
☐	☒ State Parks Department	☐
☐	☐	☐
☐	☐	☐

Trustee Agencies		County Reviewing Agencies
☐ None	☐	☐ Subdivision Committee
☒ State Fish and Game	☐	☒ DPW:
☐	☐	☒ County Fire
☐	☐	☐
☐	☐	☐
☐	☐	☐

IMPACT ANALYSIS MATRIX		ANALYSIS SUMMARY (See individual pages for details)				
			Less than Significant Impact/No Impact			
				Less than Significant Impact with Project Mitigation		
					Potentially Significant Impact	
CATEGORY	**FACTOR**	**Pg**				Potential Concern
HAZARDS	1. Geotechnical	43	☐	☒	☐	
	2. Flood	61	☐	☒	☐	
	3. Fire	71	☐	☒	☐	
	4. Noise	83	☐	☒	☐	
RESOURCES	1. Water Quality	93	☐	☒	☐	
	2. Air Quality	119	☐	☒	☐	
	3. Biota	131	☐	☒	☐	
	4. Cultural Resources	153	☐	☒	☐	
	5. Mineral Resources	163	☒	☐	☐	
	6. Agriculture Resources	165	☒	☐	☐	
	7. Visual Qualities	175	☒	☐	☐	
	8. Greenhouse Gas Emissions	183	☒	☐	☐	
SERVICES	1. Traffic/Access	187	☐	☒	☐	
	2. Sewage Disposal	197	☒	☐	☐	
	3. Education	199	☒	☐	☐	
	4. Fire/Sheriff	203	☒	☐	☐	
	5. Utilities	209	☒	☐	☐	
OTHER	1. General	219	☒	☐	☐	
	2. Environmental Safety	221	☒	☐	☐	
	3. Land Use	227	☒	☐	☐	
	4. Pop/Hous./Emp./Rec.	237	☒	☐	☐	
	5. Mandatory Findings	243	☐	☒	☐	

ENVIRONMENTAL FINDING

FINAL DETERMINATION: On the basis of this Initial Study, the Department of Regional Planning finds that this project qualifies for the following environmental document:

☐ NEGATIVE DECLARATION, inasmuch as the proposed project will not have a significant effect on the environment.

An Initial Study was prepared on this project in compliance with the California Environmental Quality Act (CEQA) Guidelines and the environmental reporting procedures of the County of Los Angeles. It was determined that this project will not exceed the established threshold criteria for any environmental/service factor and, as a result, will not have a significant effect on the physical environment.

☒ MITIGATED NEGATIVE DECLARATION, in as much as the changes required for the project will reduce impacts to insignificant levels (see attached discussion and/or conditions).

An Initial Study was prepared on this Project in compliance with the State CEQA Guidelines and the environmental reporting procedures of the County of Los Angeles. It was originally determined that the Project may exceed established threshold criteria. The applicant has agreed to modification of the Project so that it can now be determined that the Project will not have a significant effect on the physical environment. The modification to mitigate this impact(s) is identified on the Project Changes/Conditions Form included as part of this Initial Study.

☐ ENVIRONMENTAL IMPACT REPORT*, inasmuch as there is substantial evidence that the project may have a significant impact due to factors listed above as "significant".

☐ At least one factor has been adequately analyzed in an earlier document pursuant to legal standards, and has been addressed by mitigation measures based on the earlier analysis as described on the attached sheets (see attached Form DRP/IA 101). The Addendum EIR is required to analyze only the factors changed or not previously addressed.

Reviewed by: Anthony Curzi Date: 11/8/2010

Approved by: [illegible] Date: 11/8/2010

☐ This proposed project is exempt from Fish and Game CEQA filling fees. There is no substantial evidence that the proposed project will have potential for an adverse effect on wildlife or the habitat upon which the wildlife depends. (Fish & Game Code 753.5).

☐ Determination appealed – see attached sheet.

*NOTE: Findings for Environmental Impact Reports (EIRs) will be prepared as a separate document following the public hearing on the project.

Potentially Significant Effects Checklist: The topics covered by this Initial Study/Mitigated Negative Declaration conform to the standard checklist used by the Los Angeles County Department of Regional Planning and the CEQA Appendix G Environmental Checklist Form in assessing the impacts of the Project. A brief overview of the federal, state, and local regulatory setting for each resource area is included. Figures related to particular resource areas are provided at the end of each section.

During preparation of this document, the Los Angeles County Department of Regional Planning (LADRP) requested input from internal County and external agencies regarding the Project. Copies of the agency letters received by LADRP are included in Appendix M. Relevant information responding to agency comments on the Project is included in the appropriate section of this document.

Because of the short length of the proposed generation tie transmission line (1 mile from the site to the Neenach Substation) and collector lines between the Western Parcel and the Eastern Parcel (0.5 mile) (see the Project Description), the relatively low kilovolt (kV) capacity of the gen-tie and collector lines (66 kV and 34.5 kV, respectively) and the similarity of the environmental setting for the Project site and transmission lines, the gen-tie and collector transmission lines are specifically described only when impacts are different from those of the solar PV facility.

The potential levels of impact are defined as follows:

Potentially Significant Impact: A fair argument can be made, based on the substantial evidence in the file, that an effect may be significant.

Less Than Significant Impact with Mitigation: Incorporation of mitigation measures has reduced an effect from a Potentially Significant Impact to a Less Than Significant Impact.

Less Than Significant Impact: An impact is considered adverse but does not trigger a significance threshold.

No Impact: There is adequate support that the referenced information sources show that the impact simply does not apply to the subject Project.

PROJECT DESCRIPTION

Project Title	Alpine Solar Project (ASP)
Lead Agency	County of Los Angeles
Contact Person	Anthony Curzi
Project Location	Northern Los Angeles County, approximately 20 miles northwest of the City of Lancaster
Project Sponsor	NRG Solar Alpine LLC
General Plan Designation	Non Urban (NU-1)
Zoning	Heavy Agriculture (A-2)

NRG Solar Alpine LLC (the Project Sponsor) proposes to construct, own, and operate a renewable energy project providing electricity generated from clean solar technology. The Alpine Solar Project (ASP or Project) will consist of a nominal 92-megawatt (MW) alternating current (AC) solar photovoltaic (PV) generating facility located on approximately 580 acres of developable area of the approximately 800-acre Project site. The Project site includes two distinct areas, defined for the purpose of this document as the Western Parcel (approximately 600 acres) and the Eastern Parcel (approximately 200 acres). The power generated by the Project will be delivered from the Project site to the California Independent System Operator (CAISO) grid by constructing two new 66-kV generation tie-lines to the Neenach Substation, which is owned and operated by Southern California Edison (SCE). The 66-kV transmission lines for the Project will be located adjacent to West Avenue C and 210th Street West (currently unpaved roads) and will extend from the Project site to the Neenach Substation.

PROJECT OBJECTIVES

California's investor-owned utilities are required, under the California's Renewable Portfolio Standard (RPS), to provide 20 percent of electricity supplied from renewable sources by 2010. Further Executive Order S-14-08 establishes RPS targets for California that "all retail sellers of electricity shall serve 33 percent of their load with renewable energy by 2020." The RPS has created a competitive market for contracts to sell renewable energy, with success determined based on "least cost, best fit" criteria.

NRG Solar Alpine LLC was formed for the sole purpose of developing, constructing, owning, and operating the Alpine Solar Project and selling its electricity and all renewable and environmental attributes to an electric utility purchaser under a long-term contract to meet California RPS goals. The overarching objective of the Applicant is to: (1) deploy proven technology to generate renewable solar electricity at a competitive cost with little to no environmental impacts and (2) to deliver the electricity to market as soon as possible.

The ASP has the following specific objectives:

- Deploy a technology that has been commercially proven and that is readily available, efficient, and environmentally friendly.
- Generate approximately 92 MW of electricity at a cost that is competitive on the renewable market.
- Provide a new source of renewable energy to assist the State of California in achieving the RPS.

- Locate the Project in northern Los Angeles County on disturbed land in a rural setting within proximity to the existing electric distribution system.
- Minimize the potential impact to the environment by:
  - Locating the Project on previously disturbed or degraded land.
  - Maximize the use of existing infrastructure (transmission lines, roads, and water sources).
  - Minimize the potential impacts to threatened and endangered species.
  - Reduce the emission of greenhouse gases from the generation of electricity.

An overview of the ASP is provided below.

PROJECT LOCATION

The Project site is located in a rural area of the Antelope Valley in the northern portion of Los Angeles County. The nearest rural residential communities are Neenach, located approximately 3 miles from the western boundary of the Project site, and Antelope Acres, located approximately 10 miles from the eastern boundary of the Project site. The closest residence is approximately 4,000 feet from the western boundary. The largest communities in the vicinity of the Project site include Rosamond, approximately 18 miles to the northeast, and Lancaster, approximately 20 miles to the southeast. Recreational opportunities in the area include the Los Angeles County Desert Pines Wildlife Sanctuary approximately 4 miles to the south, the Arthur B. Ripley Desert Woodland State Park approximately 3 miles to the south, and the Antelope Valley Poppy Preserve State Park approximately 7 miles to the southeast. Major transportation facilities include SR 14 (north-south); SR 138/Avenue D (east-west); and several public, private, and military airports.

The Project site is generally bounded by West Avenue B to the north, West Avenue C to the south, 220th Street West to the west, and 200th Street West to the east. The Western and Eastern Parcels are approximately 0.5 mile apart. The Project location is depicted on Figure PROJECT-1. Parcel numbers and owners are provided below.

Parcel Number	Owner
Western Property	
3256-015-002	NRG Alta Vista LLC
3256-015-005	Alta Vista Suntower, LLC
3256-015-006	Alta Vista Suntower, LLC
3256-015-008	Alta Vista Suntower, LLC
3256-015-010	Alta Vista Suntower, LLC
3256-015-011	Alta Vista Suntower, LLC
3256-015-013	Alta Vista Suntower, LLC
3256-015-014	NRG Alta Vista LLC
3256-015-015	Alta Vista Suntower, LLC
3256-015-016	Alta Vista Suntower, LLC
3256-015-017	Alta Vista Suntower, LLC

Parcel Number	Owner
Eastern Property	
3256-006-012	Red Dawn Suntower, LLC
3256-006-013	Red Dawn Suntower, LLC

The proposed access road will be located on 210th Street West and a portion of West Avenue C, which is currently a one-lane unpaved road. The 66-kV transmission line connecting the Project switchyards with the Neenach Substation is shown on Figure PROJECT-2.

ENVIRONMENTAL SETTING

The Project's solar power generating units and related facilities will occupy approximately 580 acres of the 800-acre site. Previous use includes intensive agriculture production up until the fall of 2009. Invasive non-native vegetation has since overtaken both parcels. The elevation of the Project site ranges from approximately 2,730 to 2,765 feet above mean sea level (amsl). The local climate is dry, with rainfall averaging less than 10 inches per year, and there are no natural perennial surface waters in the region. The prevailing wind is in an easterly direction, with a mean speed of 5.5 miles per hour (mph). Ambient temperatures vary from below freezing to the mid 100s degrees Fahrenheit.

Existing structures onsite include an approximately 100-square-foot well house, an approximately 1,400-square-foot unoccupied trailer, and a 1,400-square-foot barn. These structures will be removed upon completion of construction. The Project site has five water wells: two agricultural wells and one domestic well on the Western Parcel, and one agricultural and one domestic well on the Eastern Parcel. A natural drainage channel runs east-west across the northern portion of the Western Parcel and across the northwestern corner of the Eastern Parcel. As shown on the site plan (Figure PROJECT-2), the Project site slopes gradually toward this drainage channel; therefore, water will sheet-flow to this drainage channel. The solar PV arrays will be located at least 100 feet away from centerline of the drainage channel to provide a setback so that the Project will not affect the natural drainage channel.

A preliminary geologic and geotechnical investigation was performed to evaluate general subsurface conditions and seismic and other geologic hazards and to provide general recommendations for design and construction of the Project. The investigation showed that (1) alluvial sediments underlie the Project site and vicinity, (2) no active faults traverse the site; therefore, site-specific seismic studies will not be required, and (3) the construction of the proposed solar power plant is feasible from a geologic and geotechnical engineering viewpoint. A topographic survey was also performed to establish the site benchmarks and boundaries and to understand grading and drainage requirements.

A Phase I Environmental Site Assessment (ESA) was performed on both the Western and Eastern Parcels and a Phase II on the Eastern Parcel to identify recognized environmental conditions (REC) that may potentially affect the Project and to characterize the nature and general magnitude of impacts associated with any REC. The ESAs are included in Appendix L. According to the ESA findings there is no evidence of historic storage of any chemicals or hazardous materials on the Eastern Parcel; however, small quantities of pesticides and fertilizers may have been applied during prior farming activities. Some of the agricultural pesticides and fertilizers potentially used on the Project site could leave low-level, residual chemical constituents in the soil; however, based on the small quantities, it is unlikely that the soil or ground water on the Project site has been adversely impacted by use of pesticides and fertilizers. The Western Parcel did exhibit some surface evidence of petroleum hydrocarbon release; however, soil borings indicated that any there was limited impact to surficial soil. The findings of the ESAs address the County of Los Angeles Fire Department, Health and Hazardous Materials Division, comments dated

September 20, 2010 (included in Appendix M). It has been determined that no further site assessment, soil mitigation or management strategies are necessary.

A portion of Los Angeles County designated Significant Ecological Area (SEA) #60, Joshua Tree Woodland, abuts the eastern boundary of the Eastern Parcel of the Project, while other portions of SEA #60 are located within a mile of the northern, western and southern boundaries of the Western Parcel of the Project (see Figures PROJECT-1 and BIOTA-1). SEA #60 supports Joshua tree woodland habitat, which is becoming scarce in the western Antelope Valley. Other common species found in SEA #60 include Mojave yucca, sage, box-thorn and buckwheat. A portion of the Project's access road from SR 138 (i.e., within or adjacent to the existing alignment of 210th Street West) and a portion of the Project's generation-tie line to the Neenach Substation will be located along the eastern border of a portion of SEA #60 (see Figure PROJECT-2).

PROJECT FACILITIES

The Project consists of a nominal 92-MW-AC solar PV generating facility. The major components of the Project are described below.

Overview of Solar Photovoltaic Technology

Several types of commercially proven PV modules are being considered for the Project, including crystalline silicon-based systems, thin film, and amorphous silicon. Manufacturers of these PV modules include SunPower, First Solar, Sharp, and others. The modules will be connected to power inverters for converting direct current (DC) into AC power. Multiple step-up transformers in the PV field will deliver power to the plant step-up transformers, which will then export the power to the point of interconnection at the utility's substation.

PV Modules

The PV modules will be either crystalline silicon-based (SunPower) or thin film such as cadmium telluride (First Solar) or amorphous silicon (Sharp). When sunlight strikes a PV module, the energy absorbed is transferred to electrons in the atoms of the semiconductor causing them to escape from their normal positions and become part of the current in an electrical circuit. The PV modules convert the sunlight directly into low-voltage DC electricity that is subsequently transformed to AC electricity through an inverter. The system only operates when the sun is shining during daylight hours. The system operates at peak output when the sunlight is most intense.

The Project will use PV modules that are light enough to be manageable by one person during the construction process. PV module technology continues to evolve but representative PV modules are listed below.

Manufacturer	Peak Output (watts)	Nominal Dimensions (feet)
SunPower	305	3.5 x 5.0
First Solar	80	2.0 x 4.0
Sharp	135	3.0 x 4.5

PV Support Structures

Depending on the selected manufacturer, the modules will be mounted on either single-axis tracking structures or fixed-tilt structures that could be up to 8 feet tall. The modules will be grouped in nominal 1 MW-AC arrays that will face due south to maximize the amount of incident solar radiation absorbed over the year. Single-axis trackers would rotate up to 180 degrees along an east-west axis. Structural support elements will be constructed of corrosion-resistant, galvanized steel members that are attached to circular piers or I-beam posts that will be driven into the prepared base grade of the site.

Inverters and Pad-mounted Transformers

At the center of each nominal 1-MW array is a power conversion station where two inverters take the low-voltage DC power output from the PV modules and convert it to AC power. The adjacent pad-mounted transformer steps the voltage up to 34.5 kV. Transformers will be painted in a non-reflective dark green color. The 34.5-kV outputs from each of the pad-mounted transformers are collected together in combining switchgear located at discrete locations on the Project site. The 34.5-kV output from the combining switchgear will be connected to the Project substations where it will then be stepped up to 66 kV for export to the grid via the Project's generation tie-line to the Neenach Substation.

Data Acquisition System

The facility will have an integrated data acquisition system connected to sensors to record plant operating data including AC power (kilowatt [kW]), ambient temperature (degrees Celsius), irradiance (watts per square meter), and wind speed (meters per second). The data acquisition system will allow data logging and performance monitoring. The Project control center will be located offsite (not a part of the Alpine Solar Project); however, the proposed operations and maintenance (O&M) building (discussed in Section 2.3.8) will contain equipment to support data acquisition.

Combiners

Combiner boxes merge wiring from multiple modules into a single high-current DC cable and provide over-current protection.

Balance of Plant Equipment

The inverters, pad-mounted transformers, and the step-up transformers will be elevated above the 100-year floodplain on reinforced concrete mat foundations. Balance of Plant mechanical and electrical equipment is supported at grade elevation on individual reinforced concrete pads.

Buildings and Enclosures

The Project building will include an O&M building. The building will be approximately 30 by 15 feet (450 square feet) and will be a single-story, pre-engineered structure not exceeding 15 feet in height. Building columns will be supported on reinforced concrete mat foundations or individual spread footings. The floor will consist of reinforced concrete slabs. A restroom will be provided, consistent with the requirements of Los Angeles County Department of Public Health (LACDPH). Onsite parking spaces will be provided for employees, visitors, maintenance crews, and equipment, in accordance with Los Angeles County standards.

Civil and Structural Facilities

The ASP site plan (Figure PROJECT-2) shows the Project site's existing topography, site grading and drainage features, and offsite and onsite stormwater drainage channels, including the onsite parking area. Project equipment (aside from the PV modules) will have non-reflective surfaces and neutral colors (such as dark green) to minimize their visual impact. Fire protection infrastructure will be installed in compliance with Los Angeles County Fire Department (LACFD) requirements.

Access and Internal Roads

Access to the Project site will be from SR 138 (West Avenue D) via 210th Street West and along West Avenue C. Roads to the Project site are already paved (e.g., SR 138) or existing dirt roads that will require minor improvements (e.g., widening and compaction). The Project will improve and realign 210th Street West and West Avenue C to the entrance of the facility as a 20-foot-wide, all-weather road, shown on Figure PROJECT-2. The proposed access road from the entrance to the proposed O&M building will be an all-weather surface. For dust control, the service and site perimeter roads will be treated with a dust palliative compacted over native soils. The Project's access roads will comply with applicable codes and ordinances related to LACFD access to Project buildings and structures. Recommended conditions are outlined in the LACFD Comment Letter dated September 20, 2010, included in Appendix M.

TRANSMISSION FACILITIES

This section describes the proposed transmission facilities required to interconnect the Project with the SCE 66-kV transmission system, as well as the internal gathering system between the two Project sites. The Project transmission facilities include switchyards (including transformers), circuit breakers, disconnect switches, and metering.

Internal Electric Gathering System

The Project will require the installation of a 34.5-kV gathering system to deliver the electricity from the combining switchgear to the Project substations. The onsite electrical system will be a combination of low-profile, single-circuit and double-circuit overhead 34.5-kV collector lines mounted on wood poles with post insulators.

A substation will be located on the southeastern corner of the Western Parcel and a second substation on the southwestern corner of the Eastern Parcel. In each substation, a 34.5-kV/66-kV step-up transformer will increase the voltage to that required for interconnection to the transmission system.

Interconnection to Neenach Substation

The Applicant has filed two separate interconnect requests with the CAISO to connect the total output from the Project to SCE's existing Neenach Substation at 66 kV. Phase 1 study reports for each interconnection request have been received. These reports identified the interconnection facilities and network upgrades required. Based on information provided by the Project Sponsor in its Interconnection Request, and based on known information about the geographic area surrounding the point of interconnection (POI), CAISO assessed the viability of the original POI request. The assessment concluded that the interconnection to the Neenach Substation is feasible.

SCE, as part of the study, assessed potential alternatives to the original POI request. Based on the information available at the time of the assessment, no alternatives were found to be superior to the original POI request.

The Project Sponsor proposes to construct two new 66-kV generation tie-lines: one originating from the substation on the Western Parcel and heading east aligned along West Avenue C, and the other originating from the substation on the Eastern Parcel and heading west aligned along West Avenue C. The overhead lines will be combined adjacent to 210th Street West on either a single-circuit or double-circuit, 66-kV line that will run south along 210th Street West adjacent to the road within a utility corridor estimated to be 75 feet wide on either side of the centerline of 210th Street West/section line to the Neenach Substation, as shown on Figure PROJECT-2, to a tie-in point located within the Neenach Substation. As discussed above, a portion of the Project's generation tie-line to the Neenach Substation will be located along the eastern border of a portion of SEA #60 (see Figure PROJECT-2).

Transmission Suspension Structures

The Project's 66-kV generation tie-lines will be suspended by either wood or steel poles with post insulators. The stronger steel poles permit span lengths of about 600 feet, while the slightly shorter wood poles have span lengths of about 300 feet. Illustrations of these poles are shown on Figure PROJECT-3 through PROJECT-8. PROJECT-9 depicts the generation tie-line route as it appears at present, and Figure PROJECT-10 presents a visual simulation of the route in the future, following generation tie-line construction for this Project.

SCE will construct a new take-off pole within its existing Neenach Substation property. The new interconnection 66-kV line will be constructed by the Project Applicant between the take-off pole and Project switchyards. SCE will complete all required work inside the boundaries of the SCE-owned Neenach Substation, along with installing the required revenue metering, retail load meters, and remote terminal unit at the generating facility.

PV FACILITY CONSTRUCTION

Construction of the Project, beginning with site preparation and grading through equipment setup and commencement of commercial operation, is expected to last approximately 12 to 18 months. Project construction will consist of three major phases: (1) site preparation, which includes clearing/grading, (2) PV system installation and testing, and (3) site cleanup/restoration. In addition, a Construction Storm Water Pollution Prevention Plan (SWPPP), incorporating best management practices (BMPs) for erosion control, will be prepared in accordance with the State Water Resources Control Board's regulations for construction. The Project will also comply with applicable post-construction water quality standards adopted by the Regional Water Quality Control Board or the State Water Resources Control Board. Major construction activities are described in the remainder of this subsection.

Site Preparation

Construction of the PV facility will begin with initial clearing and grading of the staging areas. The staging areas will typically include air-conditioned construction offices, a first-aid station and other temporary buildings, worker parking, truck loading and unloading facilities, and an area for assembling the PV support structures. The engineering, procurement, and construction contractor will then survey, clear, and grade road corridors to bring equipment, materials, and workers to the areas under construction.

The Project site will be fenced with a 6-foot-high chain-link security fence topped with barbed wire. Each of the fenced areas will include at least two gates, and a secured controlled main access gate will be located at the entrance of each area.

Road corridors, buried electrical lines, PV array locations, and the locations of other facilities may be flagged and staked to guide construction activities.

An SWPPP, incorporating BMPs for erosion control, will be prepared and approved before the start of construction. During site preparation, the SWPPP will be implemented, and initial erosion and sedimentation controls will be installed. In addition, water truck reloading stations (as required) will be established for dust control.

Earthwork

The Project site will be graded as shown on Figure PROJECT-2 to provide appropriate surfaces for the PV modules. The California Regional Water Quality Control Board – Lahontan Region provided comments on October 7, 2010 suggesting guidelines for the minimization of alterations to existing drainage paths (See RWQCB Comment Letter, Appendix M). Compliance with Guidelines 1 through 16 of Chapter 4.8 of the Water Quality Control Plan for the Lahontan Region would ensure that grading will not impact existing drainage paths. Equipment pads and any proposed structures will be elevated above

the 100-year floodplain and will meet applicable Los Angeles County Department of Public Works (LACDPW) standards and regulations. Dust palliatives will be used in road base and ground cover for erosion and dust control. The site will be graded (as necessary) using a balanced cut-and-fill approach, without import except for drainage control riprap rock material and structural pad engineered base material.

General earthwork for site preparation will consist of discing of existing light vegetation and leveling and compaction of the upper 12 inches of existing soil. Compaction will be performed as specified in the Project's soils report. General site preparation will also consist of minor grading for culverts, equipment pad foundations, and trenching for underground utility systems.

Offsite earthwork will include grading and construction of an at-grade all-weather (e.g., gravel) road on 210th Street West and West Avenue C, proposed as the facility access roads. Excess soil materials from the access roadway development suitable for fill will be stored onsite in stockpiles at designated locations using proper erosion-prevention methods. Materials unsuitable for compaction, such as debris and large rocks, will be disposed of onsite at an acceptable location. Top soil (if any) will be stockpiled for reuse in landscaped areas around the Project. At the end of construction, soil stockpiles will be spread onsite where appropriate as to not impact natural drainage. Compaction will be performed as specified in the Project's soils report.

Construction Water Use

Construction water will be supplied by onsite groundwater wells. The use of construction water will be limited to soil conditioning and dust suppression. Up to 300 acre-feet (AF) of water may be required during construction, with actual water use dependent upon rainfall during construction.

There are five existing water supply wells onsite—three wells have been in agricultural use and two were used as private residential wells. The onsite well evaluations show that the historical production rates and current pumping capacity greatly exceed the water demand requirements of the Project. Portable toilets will be used for onsite personnel use during construction and operation. Drinking water will be trucked to the site. Effluent generated during construction will be removed to an offsite treatment facility.

PV System Installation

PV system installation will include earthwork, grading, and erosion control, as well as erection of the PV modules, supports, and associated electrical equipment.

The PV modules require a moderately flat surface for installation. Some earthwork, including grading, fill, compaction, and erosion control may be required to accommodate the placement of PV arrays, concrete for foundations, access roads, and drainage features. Control of erosion during construction will be in accordance with the Construction SWPPP and may include the use of various BMPs including but not limited to silt fencing, straw bale, temporary catch basins, inlet filters, and truck tire muck shakers, which may be installed to reduce the adverse effects of erosion and sedimentation during construction.

Construction of the PV arrays will occur at a rate of approximately 0.5 MW per day. Construction of the PV arrays will include the installation of support beams, module rail assemblies, PV modules, inverters, transformers, and buried electrical cables.

Concrete will be required for the footings, foundations, and pads for the transformers, electric enclosures, and the O&M building. Concrete will be produced at an offsite location by a local provider and will be transported to the Project site by truck. The PCS housing the inverters has a pre-cast concrete base. Final concrete specifications will be determined during detailed design engineering, but any related production will meet applicable building codes.

Wastes that will be generated during construction are all non-hazardous and may contain cardboard, wood pallets, copper wire, scrap steel, common trash, and wood wire spools. No hazardous waste is expected to be generated during construction of the Project. However, field equipment used during construction will contain various hazardous materials such as hydraulic oil, diesel fuel, grease, lubricants, solvents, adhesives, paints, and other petroleum-based products contained in construction vehicles.

Construction Workers, Hours, and Equipment

The onsite construction workforce will consist of laborers, electricians, supervisory personnel, support personnel, and construction management personnel. Construction will generally occur during daylight hours, Monday through Friday. Weekend and non-daylight work hours may be necessary to make up schedule deficiencies or to complete critical construction activities. For instance, during hot weather, it may be necessary to start work earlier to avoid pouring concrete during high ambient temperatures. Construction activities will be conducted consistent with Los Angeles County Code, Section 12.08.440, regarding hours of construction. Table PROJECT-1 provides a summary of construction details.

TABLE PROJECT-1
Construction Duration, Equipment, and Workers by Activity Equipment to Be Used During Construction
Alpine Solar Project

Number of Pieces	Equipment	Purpose	Duration (Months)
Site Preparation and Clearing/Grading			
3	4,000-gal Water Truck	Dust Control/Compaction	3
4	Graders	Excavation	2
2	25-cubic-yard Paddle Scrapers	Excavation	2
4	10-ton Rollers	Dust Control/Compaction	3
Underground Work (Boring, Trenching, Installing Conduit)			
3	Small Backhoe	Excavation/Backfill	6
3	Small Sheepsfoot Roller	Compaction	6
3	4,000-gal Water Truck	Dust Control/Compaction	3
16	5-cubic-yard Dump Truck	Excavation/Backfill	10
System Installation			
16	4x4 Forklift	Material Staging	10
5	Truck-Mounted Pile Driver	Post Installation	8
32	ATV Vehicles	Material Staging/Transp	10
80	P/U Trucks	Material Staging/Transp	10
6	Small (5-kW) Generators	Post Installation	10
Testing			
16	P/U Trucks	Transportation	12

TABLE PROJECT-1
Construction Duration, Equipment, and Workers by Activity Equipment to Be Used During Construction
Alpine Solar Project

Number of Pieces	Equipment	Purpose	Duration (Months)
2	20-kW Generator	Testing	12
Cleanup/Restoration			
2	Grader	Final Cleanup	1
Note: Assumes all water comes from onsite water wells.			

Construction Schedule
The construction activities will be accomplished in 12 to 18 months (shown on Figure PROJECT-11). Construction on the Western Parcel is anticipated to start first and may conclude before the start of construction on the Eastern Parcel, or construction may overlap between the two parcels.

PROJECT OPERATION

Once placed into service, the Project typically will be operated by one to two employees onsite Monday through Friday, every week, with regular personnel visitations for security, maintenance, and system monitoring.

As the Project's PV arrays produce electricity passively, maintenance requirements will be very minimal. Any required planned maintenance will be scheduled to avoid peak-load periods, and unplanned maintenance will typically be responded to as needed depending on the event. Preventive maintenance kits and certain critical spares will be stored onsite while all other components will be readily available from a remote, climate-controlled warehouse facility. Other operational details are summarized as follows.

Maintenance Activities

Project maintenance performed onsite will consist of equipment inspection and replacement. Maintenance will occur during daylight hours where possible. However, maintenance activities on the PV modules and DC systems will be performed at night.

Fencing

As previously mentioned, to ensure the safety of the public and the facility, the property will be fenced and signs will be posted. Access to the site will be controlled, and gates will be installed at the roads entering the property. The fence will be equipped with a perimeter detection system to monitor any intrusion into the property. Other security measures under consideration include the potential deployment of forward-looking infrared cameras at select locations on the property.

Water Use

The annual water consumption for facility operations, including periodic PV module washing and domestic (potable) use, is less than 2 AF. This water will be pumped from wells located on the Project site, treated as needed for use onsite, or purchased from a local cleaning contractor and transported by truck to the site. Potable water for use in the O&M building will be provided by a source approved by LACDPH.

If, during the initial 15 years of Project operations, public water (potable and/or reclaimed water) becomes available via a public pipeline within 1 mile of the Project, the Project Owner will utilize such water if such water is available in sufficient long-term quantity and quality at a unit price that is economically viable for the Project; and if the Project can acquire a right-of-way using commercially reasonable efforts in which to construct and operate a pipeline connecting to such a public pipeline.

Wastewater Generation

No significant wastewater will be generated from the PV array operations. The PV panel wash water will be demineralized water and only contains dust washed off of the panels. This wash water will be allowed to soak into the ground and evaporate as it drips off the PV panels. Domestic wastewater, collected from sinks, toilets, and other sanitary facilities, will be discharged to an onsite septic system. A septic system, which will be permitted through the LACDPH, would provide effluent disposal for permanent facilities. The septic system will be located as presented on Figure PROJECT-2.

Plant Lighting System

The plant lighting system will provide O&M personnel with lighting in both normal and emergency conditions. The system will be designed to provide the minimum lighting needed to achieve safety and security objectives and will be shielded and oriented to focus lighting on the desired areas, minimizing light spillover.

Fire Control

The PV modules and ancillary equipment are constructed of fire-retardant material. Additionally, routine weed abatement and landscape maintenance will occur. The O&M building will be equipped with a fire suppression system consistent with Los Angeles County Building Codes. As such, the Project represents a negligible increase in fire potential. However, the Applicant will have a fire prevention plan consistent with applicable County regulations and approved by the LACFD that provides appropriate access to the Project site. Water storage will be included on the Project site to be used by the LACFD for suppression of possible vegetation fires.

The Project will comply with applicable codes, ordinances and requirements of the Land Development Unit of the LACFD for fire and life safety. These include regulations concerning construction, access, water main, and fire water flow. Suggested conditions are outlined in the instructions provided in the Fire Department comment letter dated September 20, 2010, included in Appendix M of this document. Additionally, erosion control, watershed management, vegetation and fuel modification for Very High Fire Hazard Severity Zones or Fire Zone 4, will be addressed during the building permit process according to the Fire Department Forestry Division's requirements.

Solid and Non-hazardous Waste

The Project will produce a small amount of waste associated with maintenance activities. PV plant wastes may include broken and rusted metal, defective or malfunctioning modules, electrical materials, empty containers, and other miscellaneous solid wastes, including the typical refuse generated by workers. Most of these materials will be collected and delivered back to the manufacturer or to recyclers. Any defective or broken solar modules will be returned to the manufacturer for recycling.

Hazardous Waste

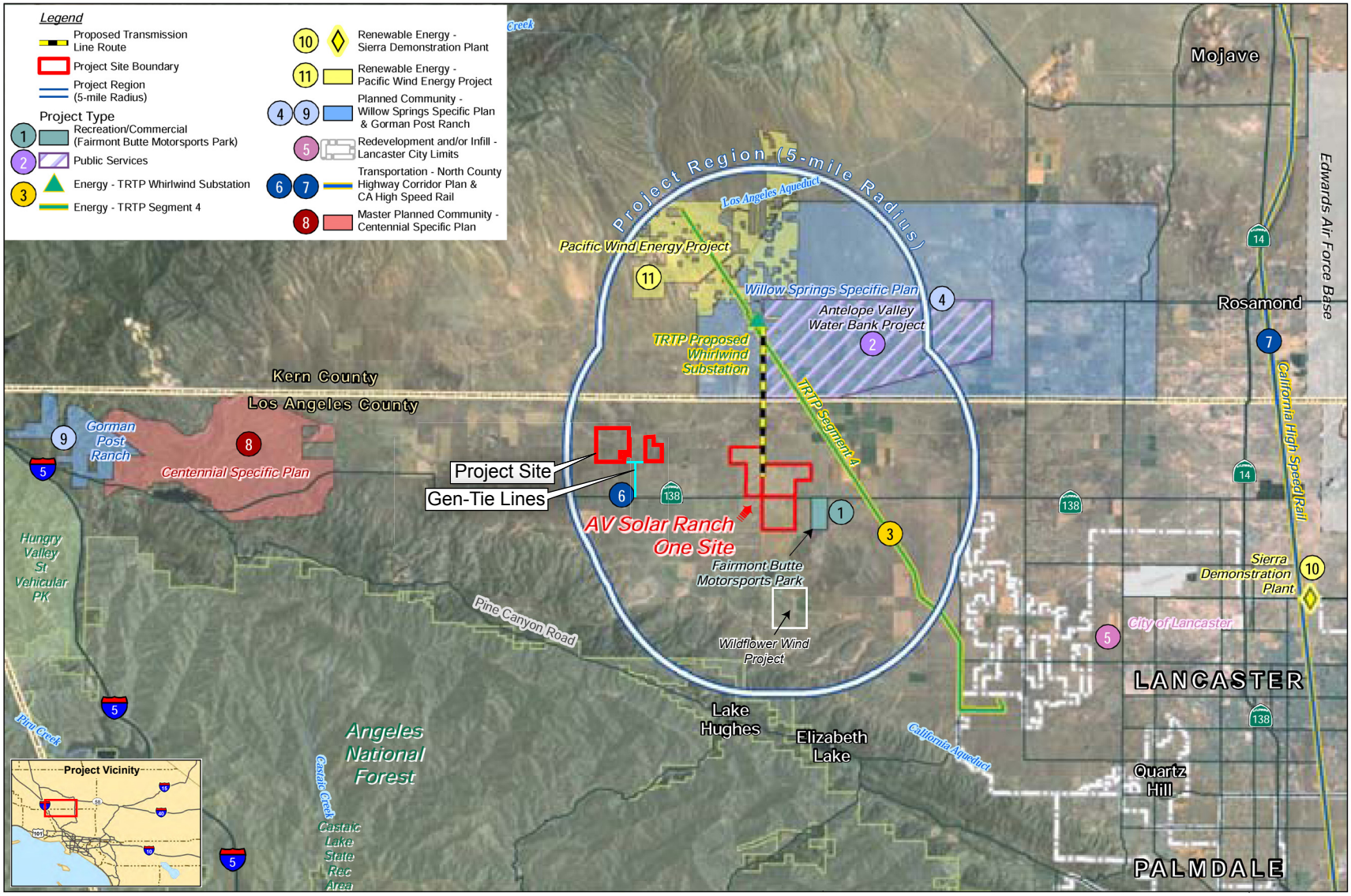
A potential hazardous waste that could be generated during operation of the facility is used biodegradable dielectric fluid and mineral oil from the transformers and miscellaneous electrical equipment. The spent oil will be collected and delivered to a recycling company at the time it is removed from the equipment. This material will not be stored onsite.

If thin film modules containing cadmium-telluride are installed, a potential hazardous waste could be the materials contained within the solar modules. In the event of a module malfunction, the module manufacturer's pre-funded recycling program will be used to collect and recycle the modules. Workers will be trained to properly identify and handle hazardous wastes in the event a hazardous waste is generated at the site.

PLANT CLOSURE

The planned operational life of the facility is 30 years. However, if the facility continues to be economically viable, it could be operated for a longer period. Procedures set forth in a decommissioning plan will be implemented. The decommissioning plan will include the following:

- Description of the proposed decommissioning measures for the facility and for all appurtenances constructed as part of the facility.
- Description of the activities necessary to restore the site if the decommissioning plan calls for removal of all equipment and appurtenances.
- Discussion of decommissioning alternatives other than restoration of the site.
- Presentation of the costs associated with the proposed decommissioning measures and the source of funds to pay for the decommissioning.
- Discussion of conformance with applicable regulations and with local and regional plans.



N

0 1 2 3 4 5 Miles

Source:
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Figure CUMULATIVE-1
Cumulative Projects
Alpine Solar Project
July 2010

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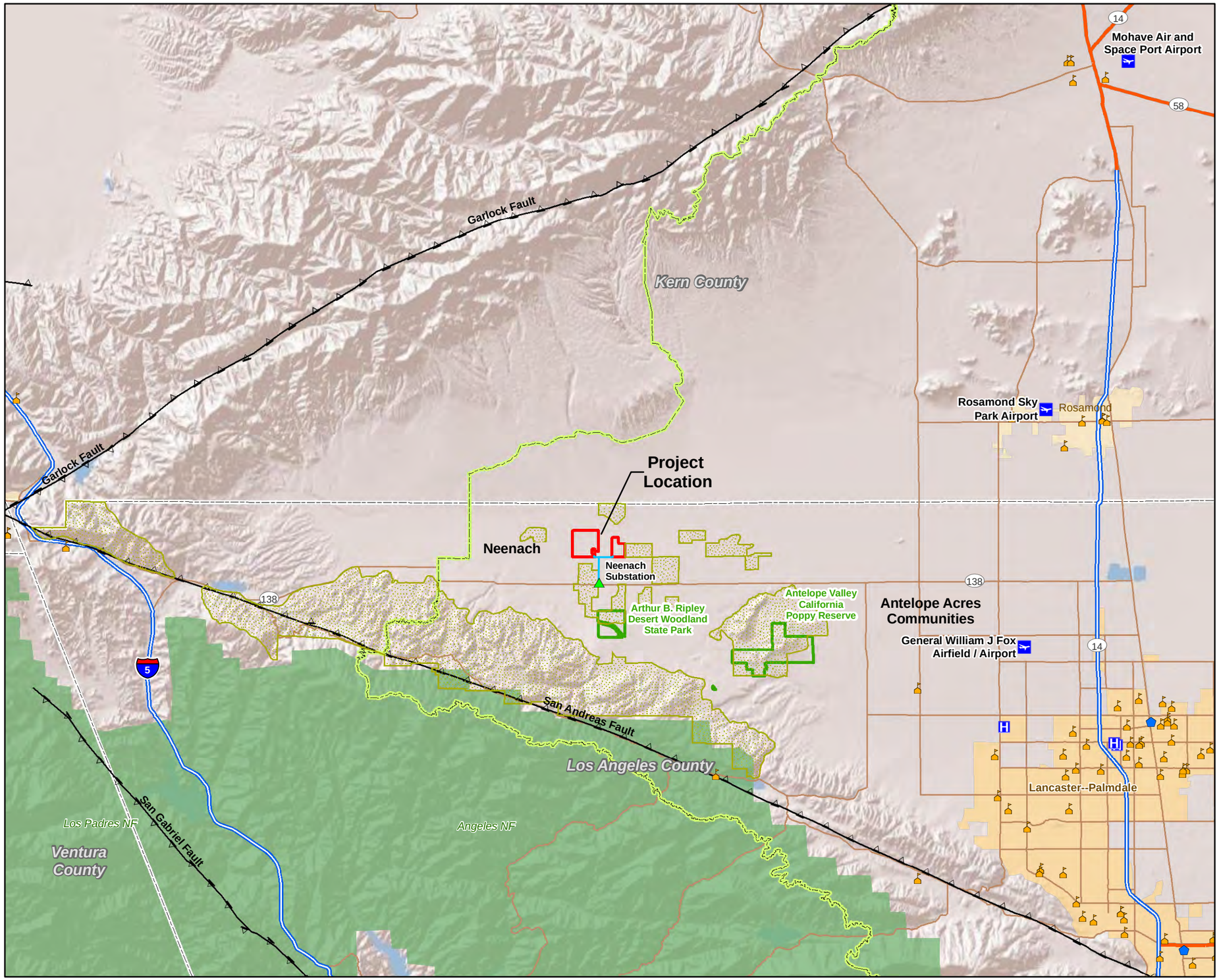

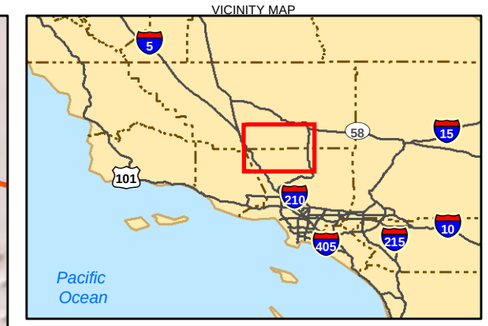

LEGEND

- Existing Substation
- Proposed Gen-tie Route (66 kV)
- Project Site
- Airports
- Hospital
- Sheriff Station
- Schools
- Pacific Crest Trail
- Major Faults
- California State Parks
- Los Angeles County Significant Ecological Ares

N

0 3.75
Miles

FIGURE PROJECT-1
Regional Overview
Alpine Solar Project
July 2010

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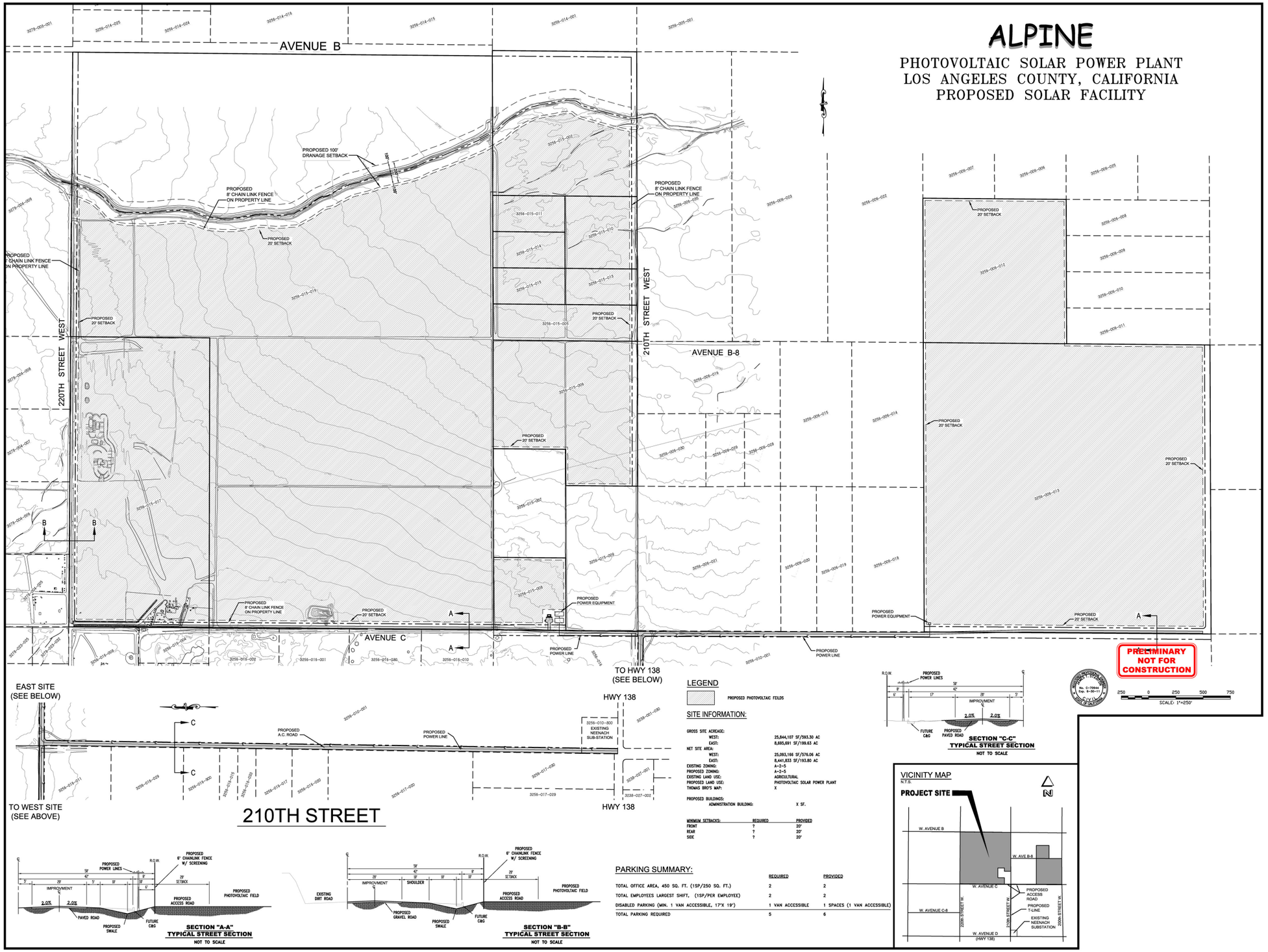

Figure PROJECT-2
Site Plan
Alpine Solar Project
July 2010

Source: Joseph E. Bonadiman & Associates, Inc., 2010.

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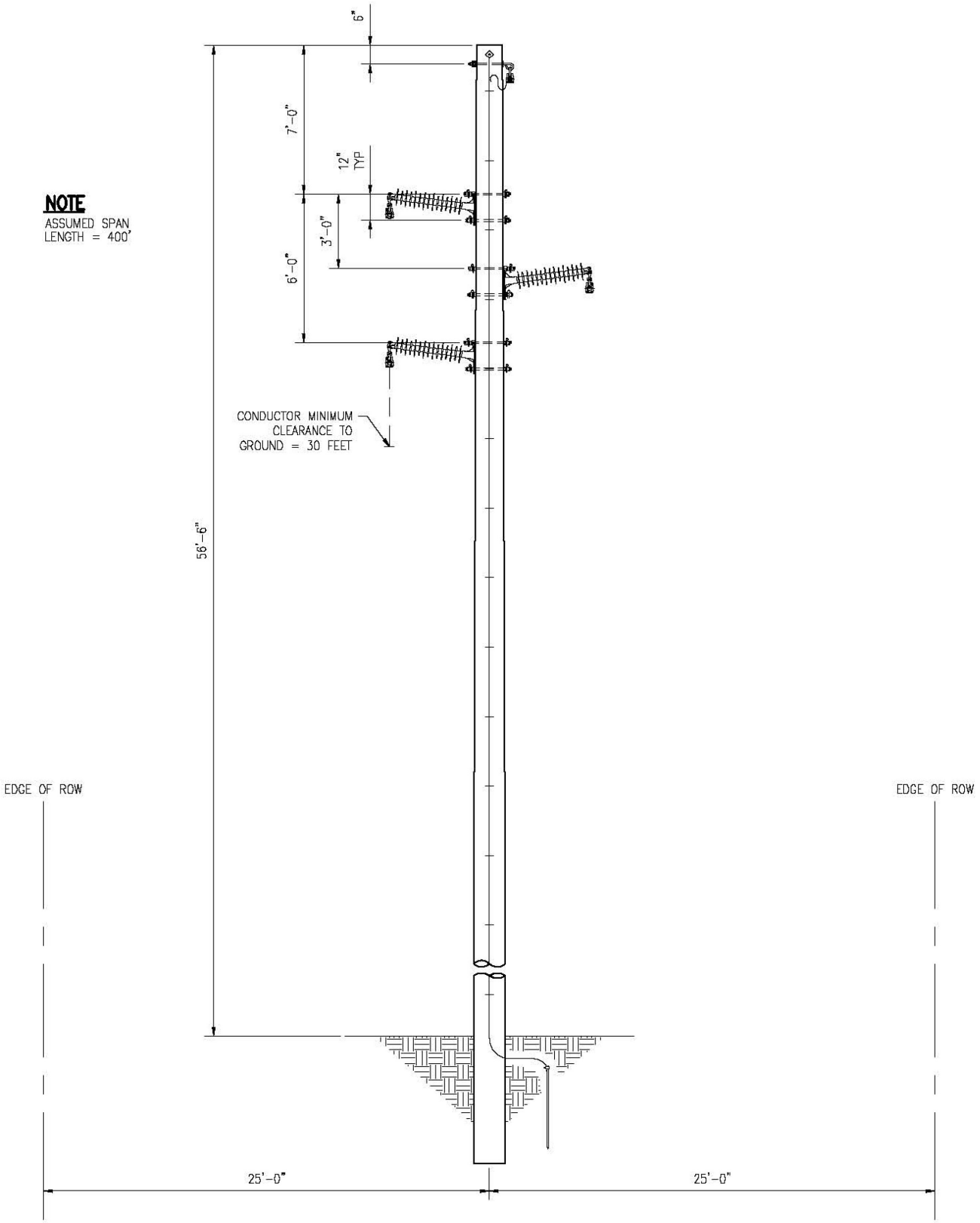

Figure PROJECT-3
66-kV Single Circuit Wooden Suspension Pole
Alpine Solar Project
July 2010

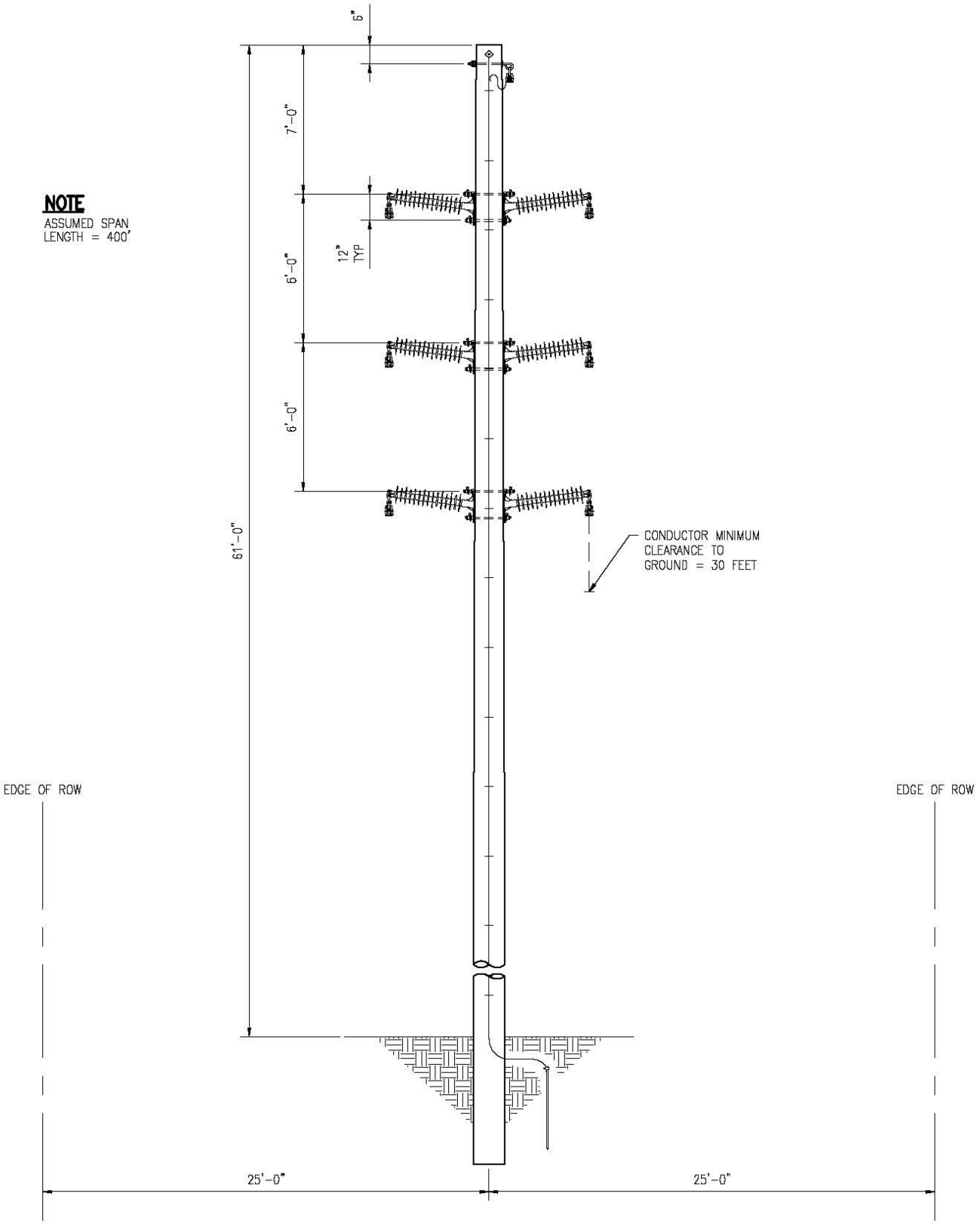

Figure PROJECT-4
66-kV Double Circuit Wooden Suspension Pole
Alpine Solar Project
July 2010

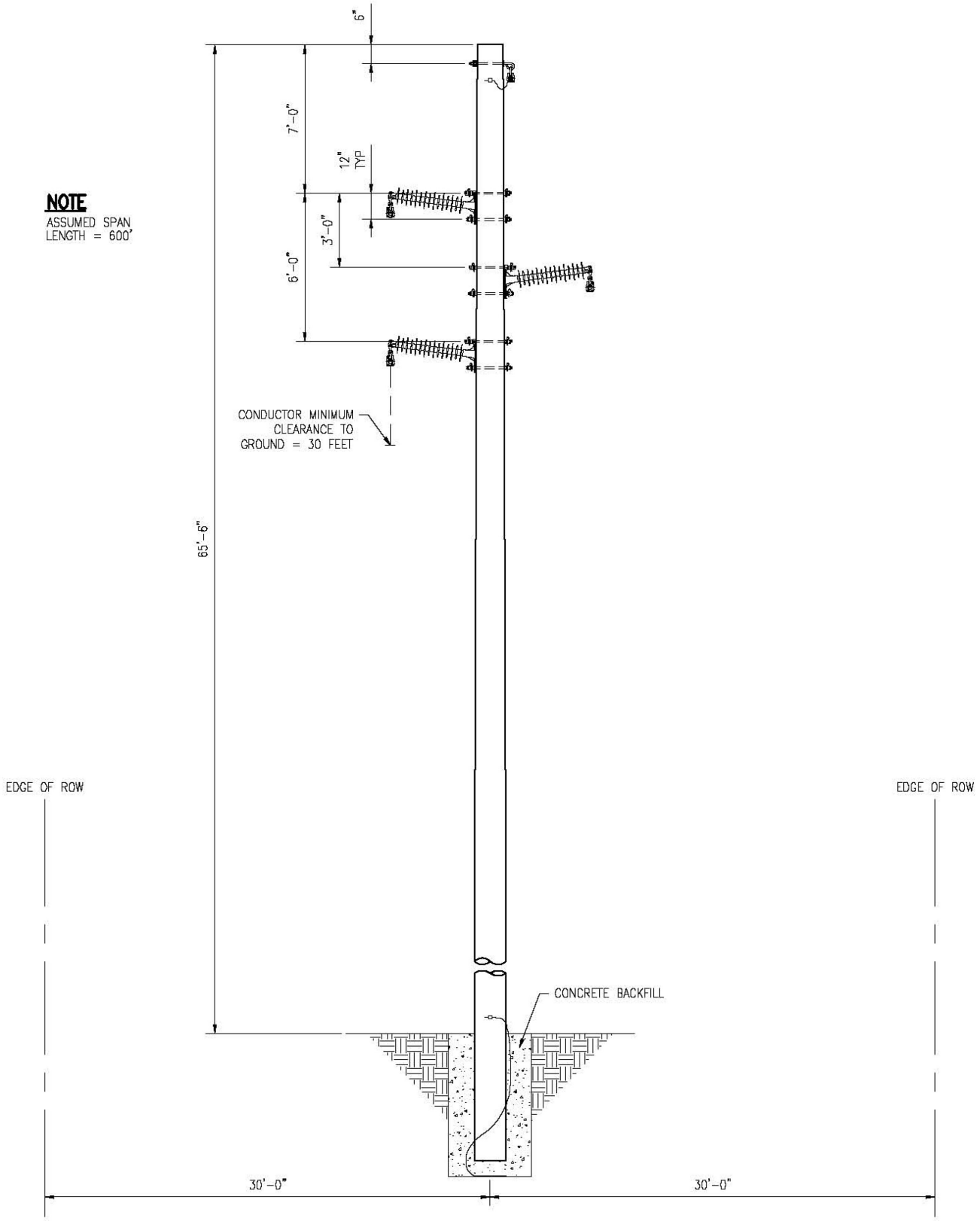

Figure PROJECT-5
66-kV Single Circuit Steel Suspension Pole
Alpine Solar Project
July 2010

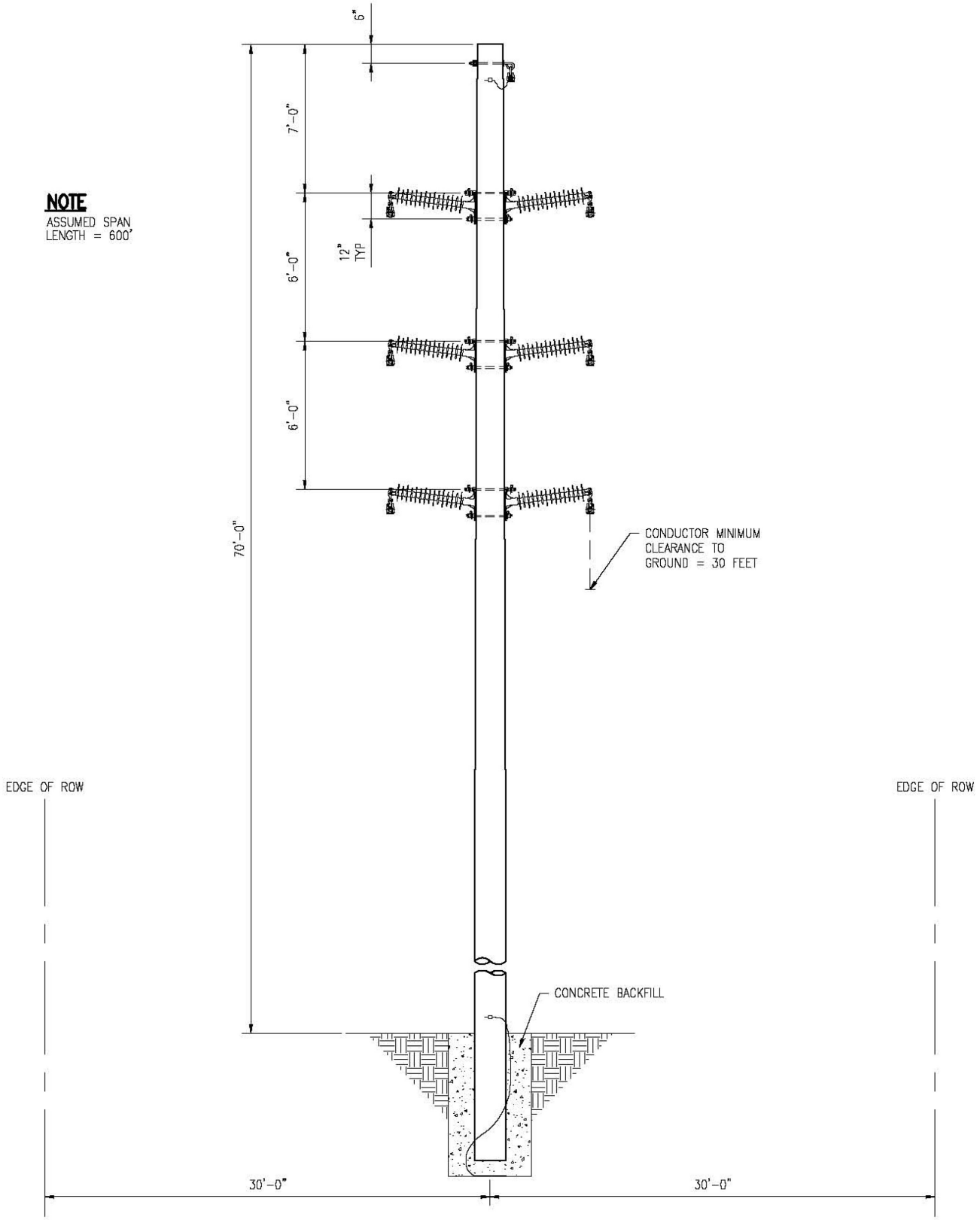

Figure PROJECT-6
66-kV Double Circuit Steel Suspension Pole
Alpine Solar Project
July 2010

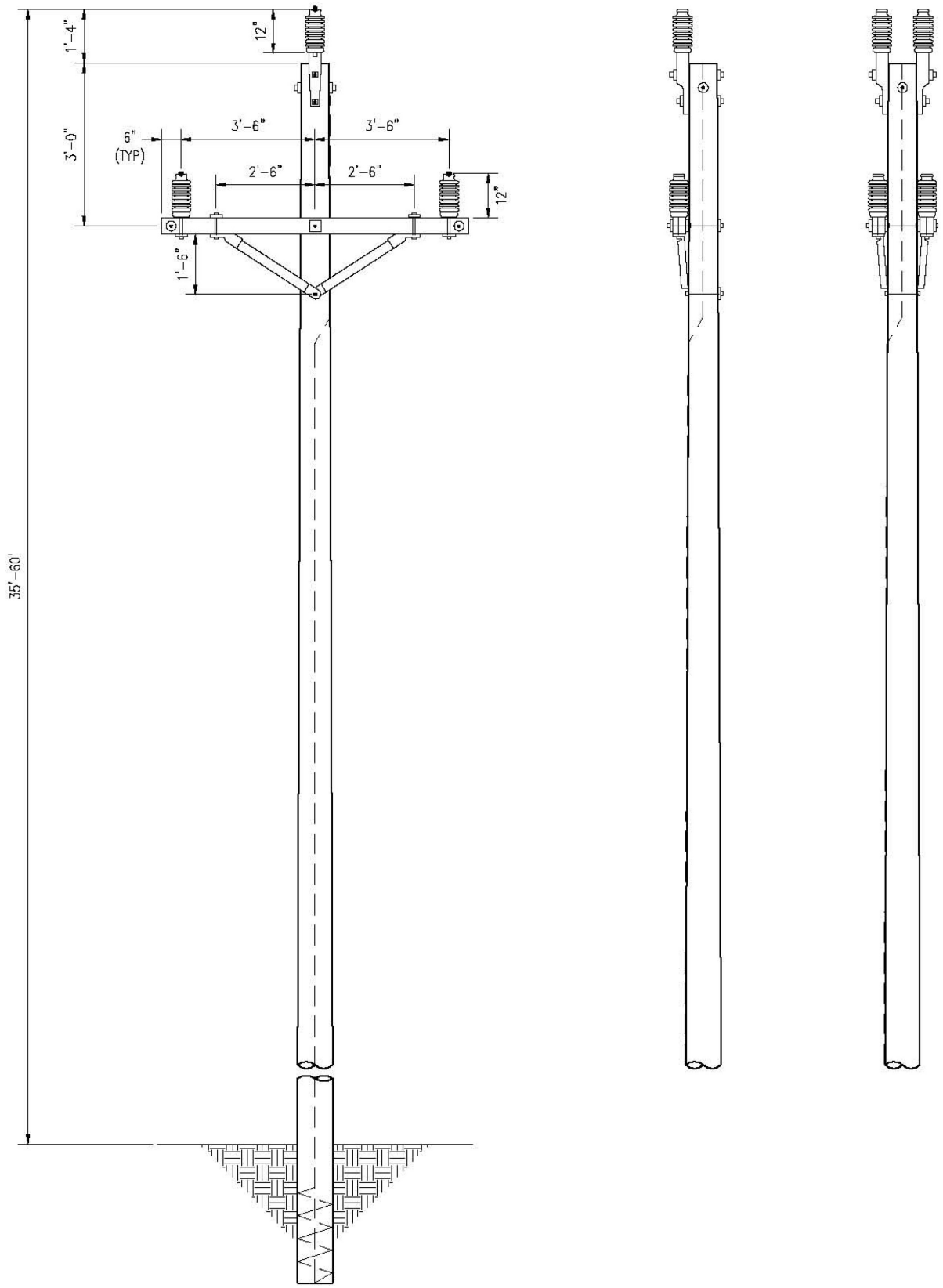

Figure PROJECT-7
34.5-kV Single Circuit Wooden Suspension Pole
Alpine Solar Project
July 2010

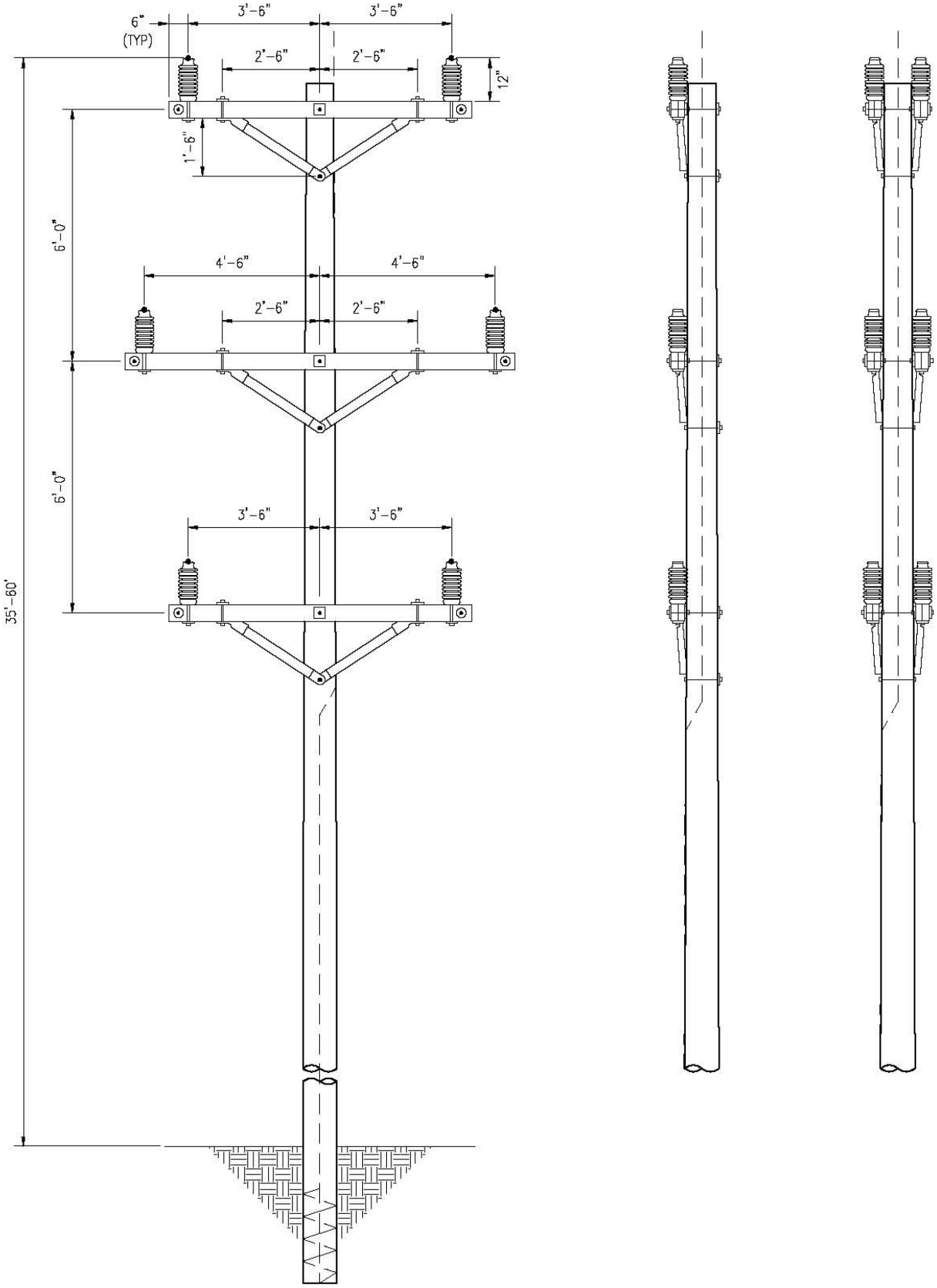

Figure PROJECT-8
34.5-kV Double Circuit Wood Suspension Pole
Alpine Solar Project
July 2010

Figure PROJECT-9
Current Gen-Tie Route
Alpine Solar Project
July 2010

Figure PROJECT-10
Visual Simulation of Future Gen-Tie Route
Alpine Solar Project
July 2010

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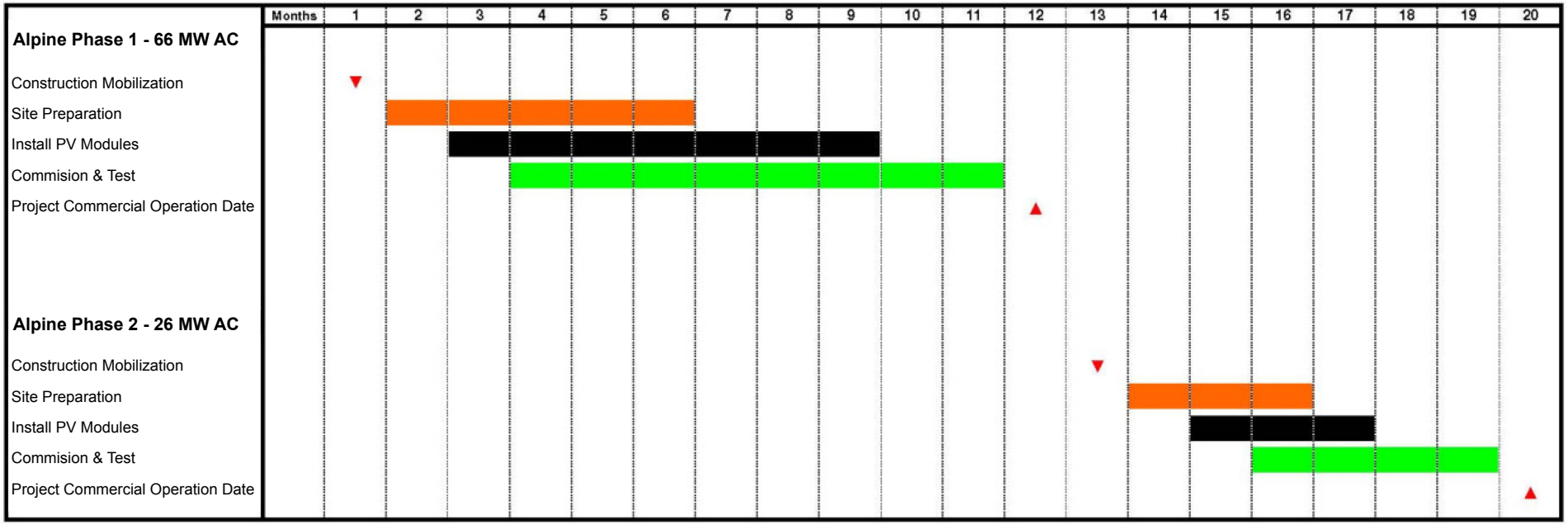

Figure PROJECT-11
Anticipated Project Schedule
Alpine Solar Project
July 2010

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HAZARDS - 1. GEOTECHNICAL

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the project located in an active or potentially active fault zone, Seismic Hazards Zone, or Alquist-Priolo Earthquake Fault Zone? (CEQA Appendix G, VI. Geology & Soils. a.i.)
b.	☐	☒	☐	Is the project site located in an area containing a major landslide(s)? (CEQA Appendix G, VI. Geology & Soils. a.iv.)
c.	☐	☒	☐	Is the project site located in an area having high slope instability?
d.	☐	☒	☐	Is the project site subject to high subsidence, high groundwater level, liquefaction, or hydrocompaction? (CEQA Appendix G, VI. Geology & Soils. a.iii.)
e.	☐	☒	☐	Is the proposed project considered a sensitive use (school, hospital, public assembly site) located in close proximity to a significant geotechnical hazard?
f.	☐	☒	☐	Will the project entail substantial grading and/or alteration of topography including slopes of over 25 percent?
g.	☐	☒	☐	Would the project be located on expansive soil, as defined in Table 18-1-B of Uniform Building Code (1994), creating substantial risks to life or property? (CEQA Appendix G, VI. Geology & Soils. d.)
h.	☐	☐	☒	Other factors? 1. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death? (CEQA Appendix G, VI. Geology & Soils. a.) 2. Strong seismic ground shaking? (CEQA Appendix G, VI. Geology & Soils. a.ii.) 3. Result in substantial soil erosion of the loss of top soil? (CEQA Appendix G, VI. Geology & Soils. b.) 4. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse? (CEQA Appendix G, VI. Geology & Soils. c.) 5. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water? CEQA Appendix G, VI. Geology & Soils. e.)

STANDARD CODE REQUIREMENTS

☒ Building Ordinance No. 2225 – Sections 110, 111, 112, 113 and Chapters 29 and 70

☒ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☒ Project Design ☒ Approval of Geotechnical Report by DPW

Regulatory Setting

This section provides an overview of state and local regulations related to Geotechnical issues applicable to the Project.

Federal

No applicable regulatory statutes.

State

Alquist-Priolo Earthquake Fault Zoning Act of 1972

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 regulates development and construction of buildings intended for human occupancy to avoid the hazard of surface fault rupture. In accordance with this law, the California Geological Survey (CGS) maps active faults and designates Earthquake Fault Zones along mapped faults. This Act groups faults into categories of "active," "potentially active," and "inactive." Historic and Holocene age faults are considered active; Late Quaternary and Quaternary age faults are considered potentially active; and pre-Quaternary age faults are considered inactive. These classifications are qualified by the conditions that a fault must be shown to be "sufficiently active" and "well defined" by detailed site-specific geologic explorations to determine whether building setbacks should be established. Any project that involves the construction of buildings or structures for human occupancy, such as an O&M building, is subject to review under the Alquist-Priolo Earthquake Fault Zoning Act. Any structures for human occupancy must be located at least 50 feet from any active fault.

Seismic Hazards Mapping Act of 1990

In accordance with Public Resources Code, Chapter 7.8, Division 2, the California Department of Conservation (CDC), Division of Mines and Geology (now the CGS) delineates Seismic Hazard Zones. The purpose of the Act is to reduce the threat to public health and safety and to minimize the loss of life and property by identifying and mitigating seismic hazards. Such hazards include those associated with strong ground shaking, liquefaction, landslides, other ground failures, or other hazards caused by earthquakes. City, county, and state agencies use the seismic hazard zone maps developed by CGS in their land-use planning and permitting processes. In accordance with the Seismic Hazards Mapping Act, site-specific geotechnical investigations must be performed prior to permitting most urban development projects within seismic hazard zones.

California Building Code

The State of California provides minimum standards for building design through the California Building Code (CBC). The CBC is based on the Uniform Building Code (UBC), which is used widely throughout the United States (generally adopted on a state-by-state or a district-by-district basis) and has been modified for conditions within California. In 2008, a revised version of the CBC took effect. In accordance with the CBC, a grading permit is required if more than 50 cubic yards of soil are moved

during implementation of a project. Chapter 16 of the CBC contains definitions of seismic sources and the procedure used to calculate seismic forces on structures.

Local

Construction and operation of the Project is subject to policies and regulations contained within General and Specific Plans, including the Antelope Valley Areawide General Plan of 1984 and the Safety Element of the County of Los Angeles General Plan. The Antelope Valley Areawide General Plan and the Safety Element of the Los Angeles General Plan form a coordinated statement of public policy by the County of Los Angeles. This statement of public policy is for use in making important public decisions relating to avoidance of geologic hazards and/or the protection of unique geologic features (County of Los Angeles, 1986; County of Los Angeles, 1990).

Antelope Valley Areawide General Plan

The Antelope Valley Areawide General Plan of 1984 is a component of the Los Angeles County General Plan. The policies, goals, and implementation measures in the Antelope Valley Areawide General Plan of 1984 for geology and soils applicable to the Project are provided below:

- Seismic safety general policies:
  - 183 - Establish and enforce standards and criteria to reduce unacceptable levels of seismic risk.
  - 184 - Require all new development and appropriate existing development to comply with established seismic safety standards.
  - 189 - Advocate detailed site evaluations and improved seismic design and construction standards for critical linear system facilities.
- Public safety general policies:
  - 201 - Maintain standards to reduce levels of fire and geologic risk.
  - 203 - Require all new development and appropriate existing development to comply with established fire and geologic safety standards.

County of Los Angeles General Plan

The County of Los Angeles General Plan Safety Element is a long-range emergency response plan that seeks to reduce loss of life, injuries, and socioeconomic disruption by designing safer environments and facilities, by avoiding hazardous sites, by removing or strengthening unsafe structures, and by promoting preparedness for emergencies. The safety element addresses earthquake, landsliding, flood and fire hazards, and potential hazardous materials incidents related to these hazards (County of Los Angeles, 1990).

The Safety Element of the Los Angeles General Plan of 1990 contains several goals and policies with respect to geologic hazards, including those applicable to the Project:

- *Goal:* Minimize injury; loss of life; property damage; and the social, cultural, and economic impacts caused by earthquake hazards. Policies relevant to the Project include:
  - 2 - Review projects proposing expansion of existing development and construction of new development, especially critical facilities, and encourage avoidance of localities exposed to high earthquake hazards through such techniques as cluster development and transfer of development rights.

- 3 - Continue enforcing stringent site investigations (such as seismic, hydrologic, geologic, and soils investigations) and implementing adequate hazard mitigation measures for development of projects in areas of high earthquake hazard, especially those involving critical facilities. Do not approve proposals and projects that cannot mitigate safety hazards to the satisfaction of responsible agencies.

- *Goal:* Protect public safety and minimize the social and economic impacts from geologic hazards. Policies relevant to the Project include:
  - 1 - Encourage the use of non-urbanized segments of active fault zones for rural and open space purposes.
  - 9 - Continue to improve and enforce stringent slope investigation and design standards and to apply innovative hazard mitigation and maintenance plans for development in hillside areas.
- *Action programs* designed to implement policies of the Safety Element relevant to the Project, and their applicable subsections, include:
  - Action 2.2: Review discretionary projects for development or expansion of the following category of critical facilities and disapprove or oppose projects that cannot mitigate hazardous conditions to the satisfaction of responsible agencies:
    - Any lifeline system facility under County jurisdiction such as energy transmission systems, major utility facilities, evacuation and disaster routes, and structures storing heavy rescue and debris cleanup equipment.
  - Action 2.3: Continue to enforce the existing County Building Code requirements (Section 311, Title 26) pertaining to Alquist-Priolo Special Studies Zones (APSSZ), including all active faults as well as those not designated within the APSSZ. Perform a regular review of compiled fault investigations to determine adequacy of active and potentially active fault designations.
  - Action 2.4: Consider using CEQA procedures, impact mitigation fees, tax incentives and disincentives, and other measures to direct inappropriate development away from earthquake-hazardous areas. Encourage incorporation of adequate risk mitigation measures during design of projects.
  - Action 3.1: For any discretionary project or development proposal in an earthquake-hazardous area, continue to encourage submittal of geologic information by certified engineering geologists and seismic information by qualified registered geologists and geophysicists. The reports are to be prepared in accordance with State Guidelines or stricter standards for any discretionary project or development proposal subject to earthquake-induced hazards. Seismic-geologic reports prepared for other projects in the vicinity of a given project may be used at the discretion of the responsible agency to supplement, or in lieu of, a new report.
  - Action 4.2: Continue to review proposals for major utility facilities (such as major new pipelines and power transmission lines), expressways, arterial highways, bridges, tunnels, transit lines, evacuation routes, and other critical lifelines under County jurisdiction that would require discretionary permits or actions. This would ensure that the proposals would either incorporate mitigation measures and safety features or would avoid, where feasible, active or potentially active faults and zones of potential liquefaction, while ensuring that their exposure to earthquake-induced slope failure or earthquake-induced inundation is minimized.

- Action 9.1: Continue to enforce, monitor, and improve hillside development standards that place responsibility on the developer, with advice from qualified engineers and geologists, to develop and implement adequate mitigation measures as conditions of project approval. Project review should ensure the following:

  a) Mitigation measures that address protection of public safety and property both inside and outside the project boundaries.

  b) Identification and adequate mitigation of adverse slope conditions, including potential earthquake and moisture-induced slope instability.

  c) Provisions for hazard mitigation or avoidance of areas subject to rapid slope failures, which allow the County to designate adequate setbacks and clearances.

  d) Adequate channel design and building pad elevation to remove development from the projected path or from rapid slope failures.

  e) Adequate investigation of the potential for liquefaction-induced lateral spreading and other slope failures, including projects with slopes of less than 25 percent located in liquefiable areas (see Plate 4) or in unstable Hs and Qs units (see Plate 2).

  f) Provision for proper site planning, design criteria, and cross sections exceeding or in compliance with Building Code standards pertaining to hillside grading practices.

  g) Provide adequate mitigation measures for projects in slopes of less than 25 percent where conditions on or near a project site constitute significant geologic hazards.

- Action 9.4: Continue to require developers to provide multiple access to proposed developments and, where feasible, equip access routes with rock nets, fences, retaining barriers, or other features designed to prevent road blockage.

Environmental Setting

The Project site is located in the western Mojave Desert within the Mojave Desert Geomorphic Province of California. According to the CGS, the Mojave Desert Geomorphic Province is a broad, interior region of isolated mountain ranges separated by expanses of desert plains (CGS, 2002). The broad alluvial basins in the province are of Cenozoic age and consist of sedimentary and volcanic materials overlying older plutonic and metamorphic rocks (Dibblee, 1980). The sites lie within the “Burnt Peak,” “Neenach School,” “Fairmont Butte,” and “Lake Hughes” United States Geological Survey (USGS) Quadrangles.

The Mojave Desert province is defined by the northeast-trending Garlock fault zone, which is north of the Project site, and by the northwest-trending San Andreas fault zone, which is west and southwest of the Project site. The Garlock fault zone also characterizes the southern boundaries of the Sierra Nevada mountain range, the Tehachapi Mountains, the Sierra Nevada geomorphic province, and the Basin and Range geomorphic province. The regional geology, including faults, of the Project area is depicted on Figure GEO-1. The seismology of the Mojave Desert portion of the San Andreas and the Garlock fault zones is discussed further in the Seismic Setting subsection.

The Project site is located in the western portion of the Antelope Valley, which is a depressed basin in the western Mojave Desert. The valley was formed as a deep structural depression or a pull-apart basin formed between the two strands of the Garlock fault and is composed of Quaternary alluvial deposits that extend several thousand feet in depth (Harden, 2004).

The topography in the Project area is generally flat and slopes gently to the northeast at approximately 0.6 percent. The median ground surface in the Project site is approximately 2,750 feet above mean sea level (USGS, 1965).

Seismic Setting

The Project site is located in a seismically active area of Southern California. Active fault zones are those that have experienced movement within the last 11,000 years; potentially active faults are those that have displayed movement within the last 1.6 million years. Active and potentially active faults are shown on Figure GEO-1; these faults are located within approximately 10 miles of the site and are characterized as follows:

- **San Andreas Fault Zone** (approximately 5 miles to the southwest): The San Andreas fault zone is a right-lateral, strike-slip fault that marks the transform boundary between the North American and Pacific plates. In California, the fault zone extends approximately 835 miles from the California-Mexico border northwest to the Mendocino Triple Junction, which is offshore of Northern California. West of the Project site, the fault zone's southern portion is characterized by complex, multiple active faults. Because of the compressed nature of this region (also called the Big Bend), slip along these faults tends to occur during large earthquakes. The last major surface rupture along the Mojave segment of the fault occurred during the 1857 Fort Tejon earthquake, which registered an approximate magnitude of 8.0 (Southern California Earthquake Center [SCEC], 2008; Harden, 2004).

- **Garlock Fault Zone** (approximately 12 miles to the northwest): The Garlock fault zone, a left-lateral, strike-slip fault, is one of the most structurally apparent geologic features in Southern California. It clearly marks the northern boundary of the Mojave Block, which is the tectonic region located between the Garlock and San Andreas faults that extends from northern Los Angeles County to the California-Arizona and California-Nevada borders. Sizeable earthquakes have been recorded along the Garlock fault zone. Although no earthquakes are known to have produced recent surface rupture along the Garlock fault, major ruptures dating to 1050 and 1500 A.D. have been identified near the towns of Tehachapi and Johannesburg. According to the SCEC, the slip rate of this fault averages approximately 7 millimeters per year, and the interval between major ruptures along the fault ranges from 200 to 3,000 years (SCEC, 2008; Harden, 2004).

The County of Los Angeles General Plan (County of Los Angeles, 1990, Plate 1) does not identify the Project site or transmission line as being located in an active or potentially active fault zone, nor is the Project site near major fault zones (the San Andreas fault, which lies approximately 5 miles to the southwest, is the nearest regional fault). The State of California has not mapped Seismic Hazard Zones for the Project region. According to the CGS, the site is not located within an Alquist-Priolo Fault Zone, and no active or potentially active faults have been identified on or adjacent to the site (CGS, 2008).

Soils

Information on types and distribution of soils within the Project area was derived from review of the National Resource Conservation Service (NRCS)—formerly the Soil Conservation Service—national database information Website and from official soil descriptions (NRCS, 2010). Soil types are characterized by soil map units that provide information on the soil series and phase. Soil series comprise soils exhibiting a common range of physical and chemical characteristics. Soil map units may contain soil inclusions that have different characteristics but are too small to be represented on the landscape-level scale used for mapping (scale 1:24,000; USGS Quadrangle Maps). The soil survey map information for the Project area is depicted on Figure GEO-2. A site-specific preliminary geotechnical report was prepared for the Western Parcel of the Project. This report is included in Appendix B.

Table GEO-1 provides the Los Angeles County soil survey identification of soils on the Project site and associated transmission line (U.S. Department of Agriculture [USDA] NRCS, 2010).

TABLE GEO-1
Soil Mapping Units Description and Properties
Alpine Solar Project

Map Symbol	Map Unit Name and Description	Slope %	Depth to Bedrock (feet)	Erosion Susceptibility
GsA	Greenfield sandy loam. Very deep, well-drained, on alluvial fans consisting mainly of granitic materials.	0 to 2	>5	Slight
HbA	Hanford coarse sandy loam. Deep to very deep, well to somewhat excessively drained, on alluvial fans.	0 to 2	>5	Slight
HcA	Hanford sandy loam. Deep to very deep, well drained, on alluvial fans.	0 to 2	>5	Slight
VaA	Vernalis sandy loam. Very deep, well drained, on alluvial fans.	0 to 2	>5	Slight
VbA	Vernalis loam. Very deep, well drained, on alluvial fans.	0 to 2	>5	Slight
VcA	Vernalis clay loam. Very deep, well drained, on alluvial fans.	0 to 2	>5	Slight

The shrink-swell potential of the above-mentioned soils is low. Erosion hazard is slight for the Vernalis clay loam, which is the most extensive soil on the Project site. Proper surface drainage would be important to reduce potential onsite erosion.

The dominant soil unit crossed by the transmission line is Greenfield sandy loam. Minor amounts of Hanford course sandy loam and Vernalis loam soil units are also crossed by the transmission line. For soils along the proposed route, the hazard of erosion is slight. The line route is on level ground; therefore, potential erosion is minimal (see Figure GEO-2).

Site-specific Soil Setting

Based on the findings of GeoSoils Consultants, Inc. (2008), the Project site is underlain by Quaternary alluvium. The site's upper 5 feet reportedly consisted of brown, silty, fine sands and gray-brown, sandy silts that are moist and loose to soft. Similar, but moderately dense to dense, materials were encountered greater than 5 feet below grade to the maximum depth explored during the geotechnical evaluation (51.5 feet below grade) (GeoSoils, 2008). Groundwater occurs at approximately 150 to 270 feet below grade.

A Phase I ESA was performed on both the Western and Eastern Parcels and a Phase II on the Eastern Parcel to identify RECs that may potentially affect the Project and to characterize the nature and general

magnitude of impacts associated with any REC. The ESAs are included in Appendix L. According to the ESA findings there is no evidence of historic storage of any chemicals or hazardous materials on the Eastern Parcel; however, small quantities of pesticides and fertilizers may have been applied during prior farming activities. Some of the agricultural pesticides and fertilizers potentially used on the Project site could leave low-level, residual chemical constituents in the soil; however, based on the small quantities, it is unlikely that the soil or ground water on the Project site has been adversely impacted by use of pesticides and fertilizers. The Western Parcel did exhibit some surface evidence of petroleum hydrocarbon release; however, soil borings indicated that any there was limited impact to surficial soil. The findings of the ESA address the County of Los Angeles Fire Department, Health and Hazardous Materials Division, comments dated September 20, 2010 (included in Appendix M). It has been determined that no further site assessment, soil mitigation or management strategies are necessary.

Geologic Resources

Geologic resources typically include recreational and unique geologic areas or areas containing oil, gas, geothermal, and/or mining resources. There are no known recreational or unique geologic resources associated with the Project site, such as rock or mineral collection areas, surface hydrothermal features, or surface expressions of geologic features (such as natural bridges, caves, and waterfalls) to generate recreational interests (California State Parks and Recreation, 2008). The Antelope Valley California Poppy State Preserve is approximately 5 miles east-southeast of the site.

Based on a review of Division of Oil, Gas, and Geothermal Resources (DOGGR) oil and gas maps, no oil or gas resources exist beneath the Project site or in the adjacent areas (DOGGR, 2007).

Impact Discussion

Impacts related to geotechnical hazards have been analyzed using significance criteria derived from the County of Los Angeles Initial Study Checklist and the CEQA Appendix G checklist. Taking into consideration the significance criteria of both checklists (which are nearly identical), the Project could have a potentially significant effect if one or more of the following were to occur:

a. Is the project located in an active or potentially active fault zone, Seismic Hazards Zone, or Alquist-Priolo Earthquake Fault Zone?

The County of Los Angeles General Plan (County of Los Angeles, 1990, Plate 1) does not identify the Project site or transmission line as being located in an active or potentially active fault zone, nor is the Project site near major fault zones (the San Andreas fault is the nearest regional fault and is located approximately 5 miles to the southwest). The State of California has not mapped Seismic Hazard Zones for the Project region. According to the CGS, the site is not located within an Alquist-Priolo Fault Zone, and no active or potentially active faults have been identified on or adjacent to the site (CGS, 2008).

The Project is located in a seismically active area of Southern California and is therefore likely to be subjected to ground shaking from faults in the region. The active and potentially active faults include the San Andreas and Garlock fault zones, which are within 10 miles of the site. Based on available online Seismic Hazard Zone Maps prepared by the CGS, the Project site is located in an area that has not been mapped for seismic hazards (CGS, 2007). Based on the CGS's Probabilistic Seismic Hazards Mapping Ground Motion Page, there is a 10 percent probability of earthquake ground motion exceeding 0.557 of gravity at the Project site in a 50-year period (CGS, 2003).

Based on the preliminary geotechnical report prepared by GeoSoils Consultants, Inc., which includes soil borings, it appears that the Project will have no geotechnical impact (GeoSoils Consultants, Inc., 2008). A Project-specific geotechnical report will be prepared by a licensed geotechnical engineer and filed with Building Permit plans for review and approval by the County Department of Public Works. Potential

impacts related to geotechnical hazards would be minimized through compliance with applicable codes, standards, and ordinances; therefore, impacts would be less than significant.

b. Is the project site located in an area containing a major landslide(s)?

The Project area is not considered to have significant potential for permanent ground displacement resulting from landslides because surface topography at and near the site is relatively flat. In addition, a site reconnaissance and review of aerial photographs did not identify any active or inactive landslides at the site or nearby. There would be no impact.

c. Is the project site located in an area having high slope instability?

As described in b., the site is relatively flat and therefore would not be subject to slope instability. There would be no impact.

d. Is the project site subject to high subsidence, high groundwater level, liquefaction, or hydrocompaction?

Ground failure related to subsidence occurs in the Project region predominantly along fault traces. Since no fault traces have been identified on or near the Project site, this type of subsidence hazard is considered low for the site. The Antelope Valley has experienced subsidence in areas resulting from groundwater pumping. However, the Project site is not located within an area affected by groundwater pumping-induced subsidence. The Project will use up to 300 AF of water for construction and up to 2 AF annually for operation from onsite waterwells. For comparison, farming operations onsite historically have pumped 2,137 acre-feet per year (AFY). Impacts related to subsidence and ground settlement are considered to be less than significant.

The Project site is not subject to high groundwater; the estimated depth to groundwater is 150 to 270 feet below grade (GeoSoils, 2008). There would be no impact.

Liquefaction is a soil condition in which seismically induced ground motion causes an increase in soil water pressure in saturated, loose, sandy soils and results in the loss of soil shear strength. Liquefaction can lead to near-surface ground failure, which may result in loss of foundation support and/or differential ground settlement. As noted above, groundwater is approximately 150 to 270 feet below grade; therefore, liquefaction is unlikely. Impacts would be less than significant.

Hydrocompaction is the subsidence of shallow soils and sediments as a result of adding water to the land surface. Typically, this occurs in dry regions where agriculture relies on extensive irrigation. The sediments susceptible to hydrocompaction were loosely deposited in an arid or semi-arid environment by processes that left them with a very high porosity (> 45 percent). As these sediments dry out, their high-porosity structure is preserved by clay particles that act as “bridges” to cement the larger particles together. If water is added, the clay “cement” loses its strength, and the sediments subside under their own weight (www.UWSP.edu, 2010). Given that the Project is not agricultural or another use relying on extensive irrigation or water use, there would be no impact.

e. Is the proposed project considered a sensitive use (school, hospital, public assembly site) located in close proximity to a significant geotechnical hazard?

The Project is a solar PV facility. Solar PV is not considered to be a sensitive use, such as a school, hospital, or public assembly site would be. There would be no impact.

f. Will the project entail substantial grading and/or alteration of topography including slopes of over 25 percent?

The Project will result in grading the site and compacting the soil to meet UBC requirements for placement of the solar PV modules, supporting structures, and the O&M building. A limited amount of

over-excavation may be required, depending on the final geotechnical report. However, over-excavation would not be substantial. Grading for the project is estimated to be approximately 96,000 cubic yards for mass grading, 69,000 cubic yards for excavations of onsite roads, trenching and electrical pad foundations, and 18,000 cubic yards for access road improvements. The Project would not result in the alteration of topography, including slopes of more than 25 percent, as the Project site is relatively flat. According to the USGS Topographic Map for the Project area, the topography on the area proposed for development slopes gently to the northeast at approximately 0.6 percent. Impacts would be less than significant.

g. Would the project be located on expansive soil, as defined in Table 18-1-B of Uniform Building Code (1994), creating substantial risks to life or property?

Expansive soil consists of fine-grained clay and generally occurs naturally in areas of historical flood plains and/or lakes. Expansive soil is subject to swelling and shrinkage, varying in proportion to the amount of moisture present in the soil. As water is introduced into the soil by rainfall or watering, expansion takes place and the soil contracts when dried, which results in small fissures or cracks. Excessive drying and wetting of soil beneath foundations can progressively deteriorate structures because it can lead to differential settlement.

The Project site preliminary geotechnical evaluation revealed that onsite materials exhibit medium expansion index (GeoSoils Consultants, Inc., 2008). The Project components are non-habitable solar PV modules and associated structures, with the exception of the O&M facility. A Project-specific geotechnical report will be prepared by a licensed geotechnical engineer and would be filed with Building Permit plans for review and approval by the County Department of Public Works. Potential impacts related to expansive soils will be minimized through compliance with applicable codes, standards, and ordinances; therefore, impacts will be less than significant.

h.1. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death?

The Project will result in a solar PV facility requiring one or two permanent employees. As noted in the ESAs (Appendix L), there is minimal potential for agricultural fertilizers or pesticides to contaminate the soil and groundwater. Therefore, the potential to cause substantial adverse effects, including risk of loss, injury, or death, are minimal. Impacts would be less than significant.

h.2. Strong seismic ground shaking?

Please refer to the discussion in a. above.

h.3. Result in substantial soil erosion of the loss of top soil?

Erosion is the displacement of solids (soil, mud, rock, and other particles) by wind, water, or ice and by downward or downslope movement in response to gravity. Geologists refer to the gravity-driven, down-slope movement of earth materials as “mass wasting” (www.nature.nps.gov, 2010). Although Project site soil characteristics allow for potential wind and water erosion, because of generally flat terrain, the Project site would not be prone to significant mass wasting.

Potential surface erosion from wind and water during construction activities will be managed through BMPs, which are expected to reduce water and wind erosion of soils to less than significant levels. These items will be required for the Project in accordance with California’s General Industrial Stormwater Permit for Construction Sites under the U.S. Environmental Protection Agency National Pollutant Discharge Elimination System Program and as noted in the California Regional Water Quality Control Board – Lahontan Region letter dated October 7, 2010. The Project SWPPP will include erosion control measures, including BMPs, to reduce erosion and sedimentation. The finished surface of the site will be

compacted and covered with gravel or a binding soil amendment. Water trucks would wet down the soil as needed during construction to control erosion, and mitigation measures to control erosion and reduce dust generation would be incorporated into the Project. Impacts related to erosion are therefore considered to be less than significant with mitigation.

h.4. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Please refer to b., c., and d. above.

h.5. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

The soils onsite (see Table GEO-1 and Figure GEO-2) do not present any limitations for a septic system. Only one to two permanent employees would be onsite, generating minimal effluent. The septic system will be designed in conformance with Los Angeles County requirements for onsite wastewater treatment systems. Impacts would be less than significant.

Mitigation and Residual Impact

Potential impacts related to geotechnical hazards would be mitigated to an insignificant level: (1) through compliance with applicable codes, standards, and ordinances; (2) by preparing and implementing a final geotechnical report containing site-specific recommendations for the Project; and (3) by implementing the following mitigation measures:

GEOTECH-1. A final geotechnical report prepared by a licensed geotechnical engineer will be submitted to the LACDPW for review and approval prior to the issuance of grading permits. Recommendations of the geotechnical report will be incorporated into final design drawings and will be implemented during construction.

GEOTECH-2. Construction activities will be conducted in accordance with a SWPPP, which will be completed and available onsite at all times during construction and will incorporate industry standard BMPs for erosion and dust control. BMPs will be installed, as appropriate, prior to the start of ground disturbance and will be maintained throughout Project construction.

Based on implementation of the above mitigation measures, the potential impacts associated with geotechnical hazards would be reduced to a less than significant level.

Cumulative Impact

The Project's incremental effect on geotechnical hazards is not cumulatively considerable, and the Project's cumulative effect is therefore not significant. Because of the distance between the Project site and cumulative project locations, the Project would not result in an incremental increase in geotechnical hazards. The cumulative impact that would result from the combination of the Project's incremental impact and the effects of the other potential cumulative projects listed in Appendix A and shown on Figure CUMULATIVE-1 is not significant.

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by, **geotechnical** factors?

☐ Potentially significant ☒ Less than significant with project mitigation ☐ Less than significant/ No Impact

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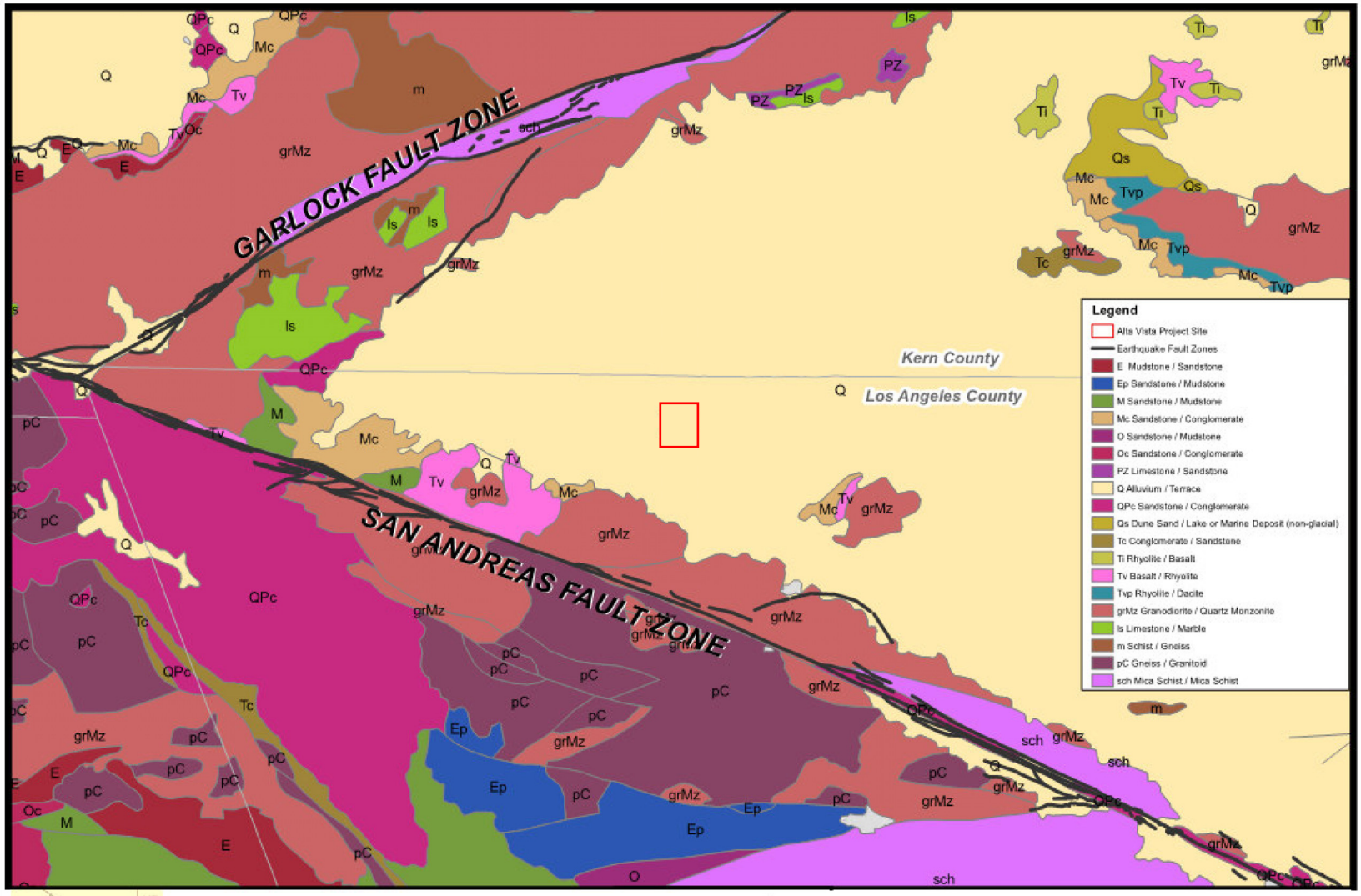


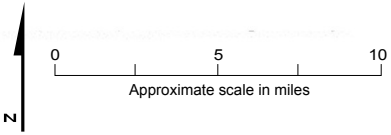
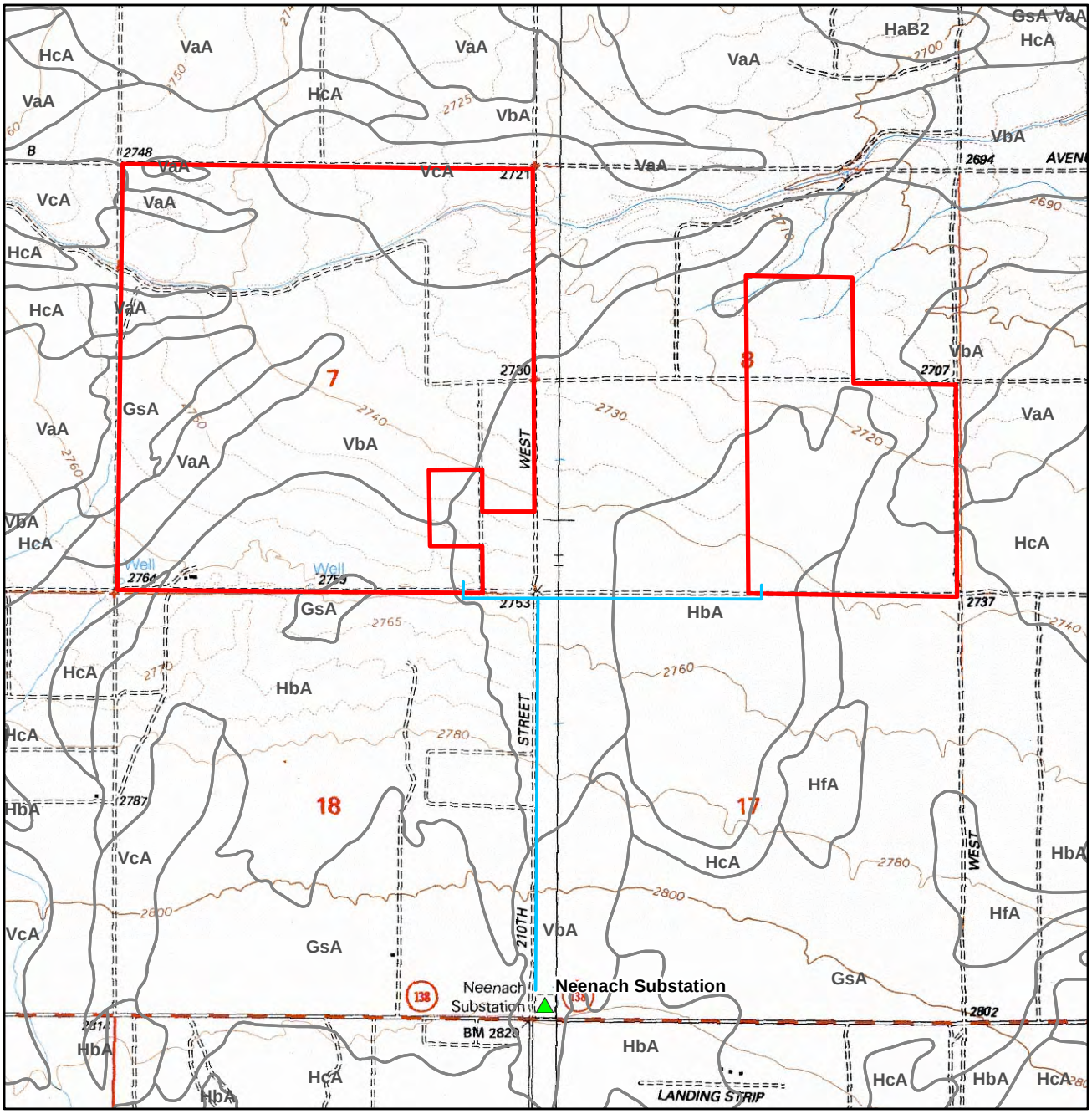


Figure GEO-1
Regional Geologic Map with Faults
Alpine Solar Project
July 2010

Source: San Diego State University, compiled from Geology of California at 750,000 Scale, California Geological Survey.

CH2MHILL



LEGEND

- Substation
- Proposed Gen-tie Route (66 kV)
- Project Site
- Soil Type

GsA - Greenfield sandy loam, 0 to 2 percent slopes
HaB2 - Hanford loamy sand, 2 to 5 percent slopes, hummocky
HbA - Hanford coarse sandy loam, 0 to 2 percent slopes
HcA - Hanford sandy loam, 0 to 2 percent slopes
HfA - Hanford loam, 0 to 2 percent slopes
VaA - Vernalis sandy loam, 0 to 2 percent slopes
VbA - Vernalis loam, 0 to 2 percent slopes
VcA - Vernalis clay loam, 0 to 2 percent slopes

N

0 1,000 2,000
Feet

Source: Natual Resources Conservation Service 2004

VICINITY MAP

FIGURE GEO-2
Soil Mapping Units
Alpine Solar Project
July 2010

HAZARDS - 2. FLOOD

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Is the major drainage course, as identified on USGS quad sheets by a dashed line, located on the project site?
b.	☒	☐	☐	Is the project site located within or does it contain a floodway, floodplain, or designated flood hazard zone? (CEQA Checklist, IX. Hydrology and Water Quality, g., h.)
c.	☐	☒	☐	Is the project site located in or subject to high mudflow conditions?
d.	☐	☒	☐	Could the project contribute or be subject to high erosion and debris deposition from run-off? (CEQA Checklist, IX. Hydrology and Water Quality, c.)
e.	☐	☒	☐	Would the project substantially alter the existing drainage pattern of the site or area?
f.	☐	☒	☐	Other factors (e.g., dam failure)? 1. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? (CEQA Checklist, IX. Hydrology and Water Quality, i.) 2. Inundation by seiche, tsunami, or mudflow? (CEQA Checklist, IX. Hydrology and Water Quality, j.)

STANDARD CODE REQUIREMENTS

☒ Building Ordinance No. 2225 – Section 308A ☐ Ordinance No. 12,114 (Floodways)

☒ Approval of Drainage Concept by DPW

☒ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☒ Project Design

Regulatory Setting

This section provides an overview of federal, state, and local regulations related to flooding issues applicable to the Project.

Federal

National Flood Insurance Program
The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP). FEMA has completed Flood Insurance Rate Maps (FIRM) that identify Special Flood Hazard Areas. To comply with the NFIP, communities must adopt a floodplain management ordinance. In California, the Department of Water Resources provides and encourages communities to adopt the California Model Floodplain Management Ordinance.

State

Standardized Urban Stormwater Mitigation Plan
A municipal stormwater NPDES permit issued to Los Angeles County and 85 cities by the Los Angeles County Regional Water Quality Control Board (RWQCB) on July 15, 1996, required the development and implementation of a program addressing stormwater pollution issues in development planning for private projects. On December 13, 2001, the RWQCB issued a new NPDES permit (Los Angeles County MS4 Permit), updating these program requirements.

The Standardized Urban Stormwater Mitigation Plan (SUSMP) was developed as part of the municipal stormwater program to address stormwater pollution as required by the NPDES permit. The SUSMP contains a minimum of the required BMPs that must be used for a designated project.

Local

Los Angeles County General Plan, Safety Policy 12
Promote the use of floodplain management measures in high-risk inundation areas, and require expansion of existing and proposed new developments to be flood-proofed and secured to minimize future flood losses.

Antelope Valley Areawide General Plan, Policy 114
As an interim policy, pending construction of regional drainage facilities, require installation of appropriate systems and facilities to retain the increase in storm runoff resulting from development on the Project site or equivalent mitigation measures.

Antelope Valley Areawide General Plan, Policy 152
Prevent public exposure to flood hazards by prohibiting residential, commercial, and industrial development in recognized flood inundation areas unless proper mitigation is instituted.

County Code Title 12 Chapter 12.84, Low Impact Development Standards
The purpose of the low impact development (LID) standards is to provide for sustainable growth while preserving the characteristics of the County's watersheds, drainage paths, water supplies, and natural resources. Chapter 12.84 guides the use of structural devices, engineered systems, vegetated natural designs, and education in order to distribute stormwater and urban runoff across a development site.

Los Angeles County Department of Public Works
Los Angeles County Department of Public Works (LACDPW) administers several programs related to flooding, engineering, design, and O&M of flood facilities. LACDWP utilizes several manuals to mandate design standards. A LACDPW memorandum, dated March 31, 1986, established the Los Angeles County policy on levels of flood protection. This policy describes which degree of flooding and, therefore, which design storms to use for different conditions and structures. This memo is predicated on the FEMA NFIP.

Antelope Valley Final Report on the Comprehensive Plan of Flood Control and Water Conservation
This document regulates development and design of flood control devices within the Antelope Valley.

Environmental Setting

The Project site is located in the Antelope Valley Watershed, which is a large, closed basin in the western Mojave Desert. This watershed straddles the Los Angeles-Kern County line and drains a total of 3,387 square miles. Approximately 80 percent of the watershed is characterized by a low to moderate slope (0 to 7 percent). The remaining 20 percent consists of foothills and rugged mountains, some of which reach up to 3,600 feet in elevation. The floor of the Antelope Valley Watershed generally lacks defined natural channels outside of the foothills and is subsequently subject to unpredictable sheet flow patterns (AVSREIR, 2010).

All water that enters the watershed either infiltrates into the underlying groundwater basin, or flows toward three playa lakes located near the center of the watershed. A playa lake is formed when rain fills a playa, or a depression in the surface of the ground. Playa lakes usually have no outflow of water. The playa lakes in the Antelope Valley Watershed are all located on Edwards Air Force Base, approximately 15 to 30 miles northeast of the Alpine Solar Project site. They include Rosamond Lake, Rogers Dry Lake, and Buckhorn Dry Lake. These playa lakes are usually dry, and only receive water following large winter storms. Surface runoff that collects in the dry lakes evaporates, and only a small quantity of water infiltrates to the groundwater because of the nearly impermeable nature of the playa soils (AVSREIR, 2010).

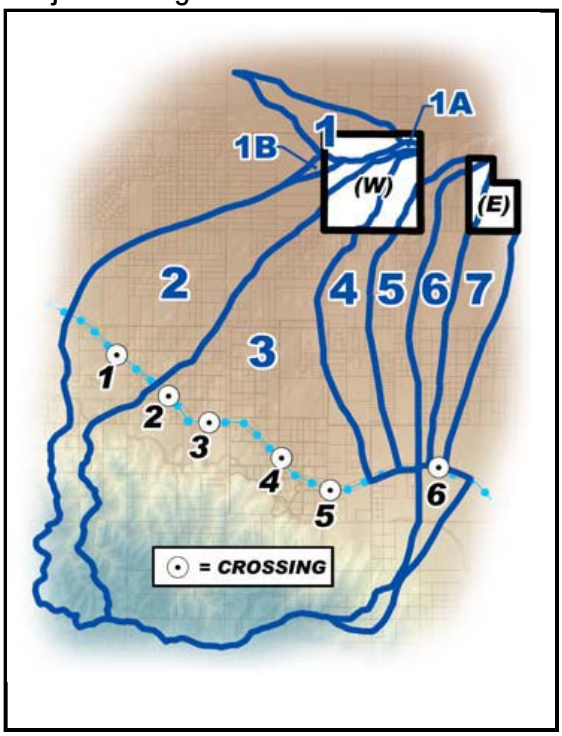
The climate of the Antelope Valley Hydrologic Region is characterized by long, hot, dry summers, and short, mild, relatively wet winters. Significant precipitation usually occurs from December through March and can result in flash flooding from short, high intensity thunderstorms.

Per FEMA Map No. 06037C0100F (Effective Date - September 26, 2008), the southwestern portion of the Project site is currently impacted by a Zone “A” floodplain. Zone “A” is identified by FEMA as the 1 percent Annual Chance (100-year) Storm Frequency (base flood elevation equals the water surface elevation of the 100-year storm). The remainder of the Project site is either (1) Within the 0.2 percent Annual Chance Flood Hazard Zone or (2) Outside of any identified floodplain (Zone “X”) (Bonadiman, 2010). See Figure FLOOD-1.

The Antelope Valley Final Report on the Comprehensive Plan of Flood Control and Water Conservation, dated June 1987, provides information about flood control drainage areas. The Western Parcel is impacted by two major drainage courses from the southwest as well the natural drainage channel traversing the northern portion of the Western Parcel. These three drainage courses are Flood Management Pathways (FMPs), which do not require easements or the construction of any improvements (County of Los Angeles, 1987).

As noted in the Project Hydrology and Hydraulics report prepared by Joseph E. Bonadiman & Associates (Appendix C), the existing conditions watershed for the Project sites is approximately 12,232 acres in size, and consists of nine Major Drainage Areas, as shown below.

Alpine Solar Project
Major Drainage Areas



Joseph E. Bonadiman and Associates, 2010.

Impact Discussion

Impacts related to flooding have been analyzed using significance criteria derived from the County of Los Angeles Initial Study Checklist and the CEQA Appendix G checklist. Taking into consideration the significance criteria of both checklists (which are nearly identical), the Project could have a potentially significant effect if one or more of the following were to occur:

a. Is a major drainage course, as identified on USGS quad sheets by a dashed line, located on the project site?

As shown on Figure FLOOD-2, there is a major drainage course mapped onsite. The Project Preliminary Hydrology and Hydraulics report prepared by Joseph E. Bonadiman & Associates (Appendix C) indicates that this channel (an identified USGS blue line stream) currently accepts tributary flows from the west and southwest, as well as the majority of existing onsite flows, and is considered the primary receiving water for the Project (Bonadiman, 2010).The Project incorporates a 100-foot from centerline of the drainage channel setback for all Project components (e.g., solar PV modules); therefore, the Project would not affect the drainage course. Impacts would be less than significant.

b. Is the project site located within or does it contain a floodway, floodplain, or designated flood hazard zone?

Per FEMA Map No. 06037C0100F (Effective Date - September 26, 2008), the southwestern portion of the Project site is currently impacted by a Zone “A” floodplain. Zone “A” is identified by FEMA as the 1 percent Annual Chance (100-Year) Storm Frequency (base flood elevation equals the water surface elevation of the 100-Year storm). The remainder of the Project site is either (a) within the 0.2 percent Annual Chance Flood Hazard Zone, or (b) outside any identified floodplain (Zone “X”) (Bonadiman, 2010).

The proposed solar PV modules are the only Project components that would be placed within areas mapped Zone A. These structures are placed on steel piers or piles driven into the prepared soil sub-base and elevated above the 100-year floodplain. Water can flow unimpeded beneath the modules and therefore would not impact flows across the Project site. Additionally, mitigation measures require the preparation of a final Hydrology and Hydraulics Report to identify appropriate design features that will be implemented to further minimize flooding potential. Therefore, impacts would be less than significant.

c. Is the project site located in or subject to high mudflow conditions?

The Project site would not be subject to high mudflow conditions, as the topography onsite is generally flat and no significant slopes are located adjacent to the site. Impacts would be less than significant.

d. Could the project contribute or be subject to high erosion and debris deposition from run-off?

As discussed in Geotechnical Hazards, h.3., potential surface erosion from wind and water during construction activities will be managed through BMPs, which are expected to reduce water and wind erosion of soils to less than significant levels. Upon completion of construction, the finished surface of the site will be compacted and covered with gravel or a binding soil amendment to minimize potential erosion and debris deposition. The topography of the site is generally flat, which further reduces the potential for high erosion and debris deposition. Therefore, impacts would be less than significant with mitigation.

e. Would the project substantially alter the existing drainage pattern of the site or area?

Historical flows, as noted in the Preliminary Hydrology and Hydraulics Report, drain to the large channel that traverses the northern portion of the Western Parcel (Bonadiman, 2010). Project components would not impede flows across the Project site, as the solar PV modules are elevated above the ground at least 12 inches. Final grading and drainage plans would account for any Project components, such as transformers, that do not allow water to pass beneath. All flows would still be directed to the drainage channel in a non-erosive manner and would not cause changes to the downstream conditions. Therefore, impacts would be less than significant.

f.1. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

The Project is not located in an area with levees or dams. As noted above, final grading and drainage plans would account for drainage across the Project site and discharge flows in the same manner as current drainage patterns. Therefore, impacts would be less than significant.

f.2. Inundation by seiche, tsunami, or mudflow?

The topography of the Project site is generally flat; therefore, the potential for mudflow is minimal. The site would not be impacted by seiche or tsunami as the site is not adjacent to a lake, bay, sea, or ocean. No impact would occur.

Mitigation and Residual Impact

Potential impacts related to flood hazards would be mitigated to an insignificant level: (1) through compliance with applicable codes, standards, and ordinances; (2) by preparing and implementing a final Hydrology and Hydraulics Report containing site-specific recommendations for the Project; (3) by implementing previously identified mitigation measures related to preparation of a SWPPP; and (4) by implementing the following mitigation measure:

FLOOD-1. A final Hydrology and Hydraulics Report will be prepared that includes recommendations to address potential design and flood constraints. The final report will be provided to the Department of

Public Works prior to issuance of grading permits for the Project. The design features included in the final report will be implemented.

Based on implementation of the above mitigation measure, the potential impacts associated with flood hazards would be reduced to a less than significant level.

Cumulative Impact

There are no other pending projects within the Project's 12,232-acre watershed defined in the Bonadiman hydrology report (2010), and, therefore, the Project would not be expected to cumulatively contribute to flooding impacts. The Project's construction and operation activities have the potential to increase erosion, sediment load, and debris material into runoff flows. However, the Project would implement engineering and BMP measures during construction and operation, and as a result, would be expected to reduce potential erosion to less than significant levels. Changes in runoff flows and volumes between pre- and post-development conditions would be insignificant as reflected in the Hydrology and Hydraulics Report (Bonadiman, 2010). Accordingly, the Project's incremental effect would not be cumulatively considerable, and the Project's cumulative effect is therefore not significant. When combined with the impacts of the other potential cumulative projects listed in Appendix A and shown on Figure CUMULATIVE-1, potential cumulative effects related to flood hazards would be less than significant.

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by **flood (hydrological)** factors?

☐ Potentially significant ☒ Less than significant with project mitigation ☐ Less than significant/ No impact

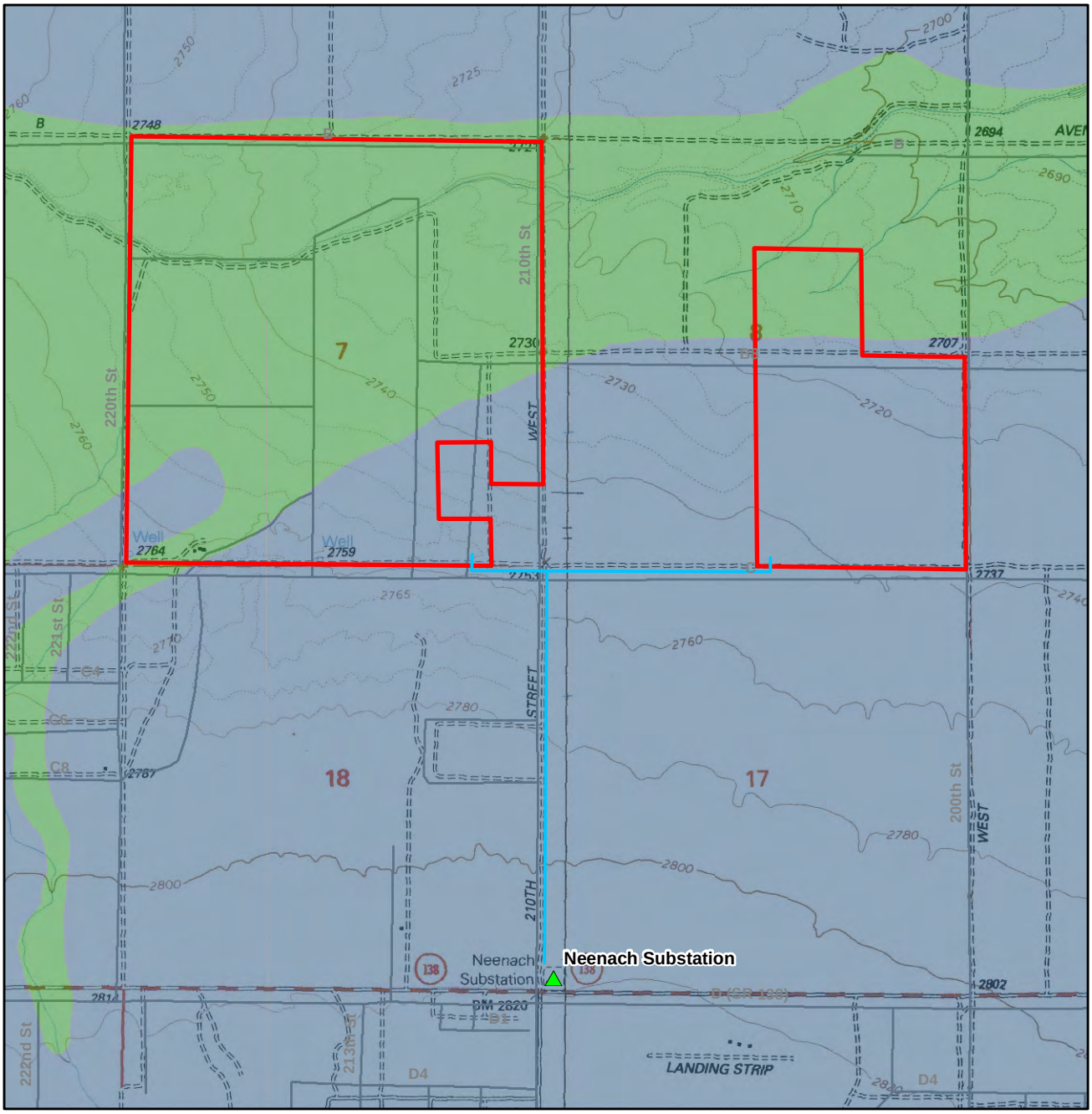
References

Joseph E. Bonadiman and Associates (Bonadiman). 2010. Preliminary Hydrology and Hydraulics Report. Alpine Solar Generating Station.

County of Los Angeles. 2010. Draft Environmental Impact Report AV Solar Ranch One Project (AVSREIR). June.

County of Los Angeles. 1987. Antelope Valley Final Report on the Comprehensive Plan of Flood Control and Water Conservation. June.

Federal Emergency Management Agency (FEMA). 2008. Flood Insurance Rate Map (FIRMette). http://msc.fema.gov.



LEGEND

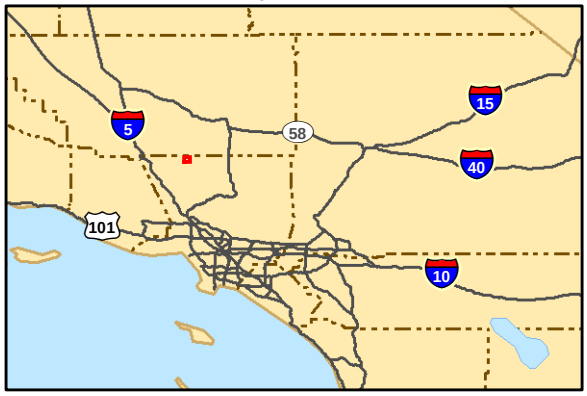
- Existing Substation
- Proposed Gen-tie Route (66 kV)
- Project Site

FEMA Flood Zone

- Zone A
- Zone X

Notes:
1. FEMA Flood Insurance Rate Maps, 1993

VICINITY MAP



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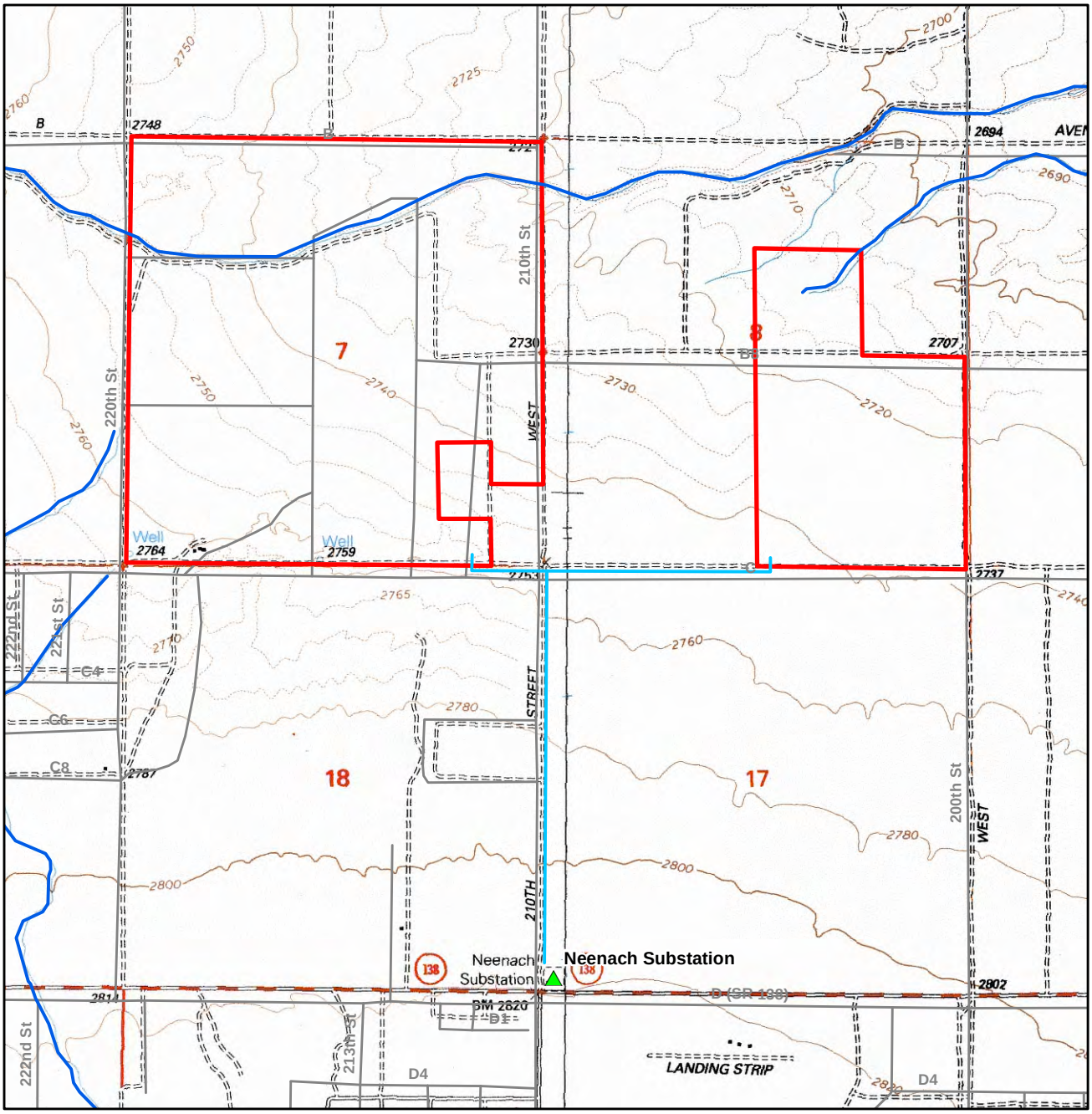
Feet

FIGURE FLOOD-1
FEMA Flood Zones
Alpine Solar Project
July 2010



LEGEND

- Existing Substation
- Proposed Gen-tie Route (66 kV)
- Project Site
- Blue Line Stream

VICINITY MAP

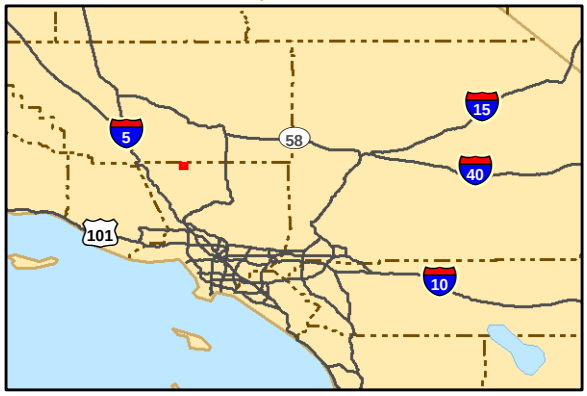


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FIGURE FLOOD-2
USGS Topo Map with Major Drainage Course
Alpine Solar Project
July 2010

HAZARDS - 3. FIRE

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the project site located in a Very High Fire Hazard Severity Zone (Fire Zone 4)?
b.	☐	☐	☒	Is the project site in a high fire hazard area and served by inadequate access due to lengths, width, surface materials, turnarounds or grade?
c.	☐	☒	☐	Does the project site have more than 75 dwelling units on a single access in a high fire hazard area?
d.	☐	☐	☒	Is the project site located in an area having inadequate water and pressure to meet fire flow standards?
e.	☐	☒	☐	Is the project located in close proximity to potential dangerous fire hazard conditions/uses (such as refineries, flammables, explosives manufacturing)?
f.	☐	☒	☐	Does the proposed use constitute a potentially dangerous fire hazard?
g.	☐	☒	☐	Other factors? Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? (CEQA Checklist, VIII. Hazards and Hazardous Materials, h.)

STANDARD CODE REQUIREMENTS

☒ Water Ordinance No. 7834 ☒ Fire Ordinance No. 2947 ☒ Fire Regulation No. 8
☒ Fuel Modification / Landscape Plan

☒ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

☒ Project Design ☐ Compatible Use

Regulatory Setting

This section provides an overview of federal, state, and local regulations related to fire issues applicable to the Project.

Federal

International Fire Code

The International Fire Code (IFC) contains regulations relating to construction and maintenance of buildings and the use of premises. Topics addressed in the IFC include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions intended to protect and assist fire responders, industrial processes, and other general and specialized fire-safety requirements for new and existing buildings and premises. The Code contains specialized technical regulations related to fire and life safety and provisions for storage and handling of hazardous materials. The LACFD has adopted (except where otherwise noted) and incorporated the IFC into the County Fire Code.

National Fire Protection Association

The National Fire Protection Association (NFPA) prescribes minimum requirements necessary to establish a reasonable level of fire safety and property protection from the hazards created by fire and explosion. The standards apply to the manufacture, testing, and maintenance of equipment.

State

California Fire Code (Title 24, Part 9, California Code of Regulations)

The California Fire Code (CFC) is Part 9 of the California Code of Regulations, Title 24, also referred to as the California Building Standards Code. The CFC incorporates the Uniform Fire Code standards but also includes State regulations and standards. This CFC prescribes regulations consistent with nationally recognized minimum standards for the safeguarding to a reasonable degree of life and property from the hazards of fire explosion; dangerous conditions arising from the storage, handling, and use of hazardous materials and devices; conditions hazardous to life or property in the use or occupancy of buildings or premises; and provisions to assist emergency response personnel. The LACFD has adopted (except where otherwise noted) and incorporated the CFC into the County Fire Code. All new buildings within Los Angeles County must conform to standards within the CFC.

California Health and Safety Code

State fire regulations set forth in Section 13000 et seq. of the California Health and Safety Code include regulations for building standards (as also set forth in the California Building Code), fire protection and notification systems, fire protection devices (such as extinguishers and smoke alarms), high-rise building and childcare facility standards, and fire suppression training.

Public Resources Code 51175-5118

Government Code 51175-51189 directs the California Department of Forestry and Fire Protection (CAL FIRE) to map areas of very high hazard within Local Responsibility Areas (LRAs). Mapping of the areas, referred to as Very High Fire Hazard Severity Zones (VHFHSZ), is based on relevant factors such as fuels, terrain, and weather. Based on the CAL FIRE recommended Fire Hazard Severity Zones maps for Los Angeles County, the Project (facility site and proposed transmission line route) is not located within Very High or High Fire Hazard Severity Zones (CAL FIRE, 2007).

Public Resources Code Section 4292, Power Line Hazard Reduction

This section requires that any person who owns, controls, operates, or maintains any electrical transmission or distribution line upon any brush-covered land or grass-covered land will maintain around and adjacent to any pole that supports a switch, fuse, transformer, lightening arrester, line junction, or dead end or corner pole, a firebreak. The firebreak will consist of a clearing of not less than 10 feet in each direction from the outer circumference of such pole. The applicable project 34.5-kV and 66-kV transmission line poles will be maintained in accordance with this code section.

Public Resources Code Section 4293, Power Line Clearance Required
This section requires that any person who owns, controls, operates, or maintains any electrical transmission or distribution line upon any brush-covered land or grass-covered land will maintain a clearance of the respective distances in all directions between all vegetation and all conductors at 4 feet for any line operating at 2,400 or more volts, but less than 72,000 volts (between 2.4 kV and 72 kV); and 10 feet for any line operating at 110,000 or more volts (110 kV and greater). The applicable project 34.5-kV and 66-kV transmission line poles will be maintained in accordance with this code section.

CPUC General Order 95, Rules for Overhead Electric Line Construction
General Order (GO) 95, adopted in 1941 and updated most recently in 2006, is the key standard governing the design, construction, operation, and maintenance of overhead electric lines in California. GO 95 encompasses safety standards for overhead electric lines, including minimum distance for conductor spacing, minimum conductor ground clearance, standards for calculating maximum sag, electric line inspection requirements, and vegetation clearance requirements. The Project transmission line is designed in accordance with GO 95 standards. The issues, inspection requirements (governed by Rule 31.2), and vegetation clearance requirements (governed by Rule 35), which directly pertain to fire safety for the Project, are summarized below.

General Order Rule 31.2, Inspection of Lines
Rule 31.2 requires that all classes of overhead lines be inspected frequently and thoroughly for the purpose of ensuring that they are in good condition. Rule 31.2 also requires that lines temporarily out of service be inspected and maintained in such condition as not to create a hazard. The 34.5-kV and 66-kV transmission lines will be inspected and maintained in accordance with Rule 31.2.

General Order 95 Rule 35, Tree Trimming
Rule 35 defines minimum vegetation clearances around power lines and requires 10-foot radial clearances for any conductor of a line operating at 110,000 volts or more but less than 300,000 volts. These requirements apply to the proposed 66-kV transmission line. The 66-kV transmission line will be maintained in accordance with Rule 35.

Local

Los Angeles County Fire Code, Title 32
The LACFD provides fire protection service to the Project site and portions of the proposed offsite 66-kV transmission line route. The LACFD has established the Los Angeles County Fire Code (Title 32) and Building and Safety Code to provide minimum standards for construction. These standards ensure that all buildings and structures are safe for occupancy and use. Title 32 of the Los Angeles County Code contains Sections 317.1.1 and 317.1.2 pertaining to electrical transmission lines, which are identical to Public Resources Code (PRC) Sections 4292 and 4293, respectively. The Project will be designed and maintained in accordance with Title 32.

Los Angeles County Fire Department Regulation 27, Requirements for Building Construction and Land Development Use Within or Adjacent to High Voltage Transmission Lines
Regulation 27 outlines procedures related to structures and uses that are underneath and adjacent to high-voltage transmission lines. Regulation 27 applies to power lines operating at or above 66 kV and pertains to the proposed 66-kV transmission line. The Project will comply with Regulation 27.

Los Angeles County Fire Department Regulation 5, Limited Access Devices and Systems
Regulation 5 outlines policies and procedures related to the location, use, and required LACFD approvals and emergency access provisions for limited access devices at fire access gates associated with the Project facility. The Project will comply with Regulation 5.

Environmental Setting

The Antelope Valley is characterized by extreme temperatures and frequent high winds. The Project site is not located within a recommended Local Agency Very High or High Fire Hazard Severity Zone (CAL FIRE, 2007b). The LACFD Fire Prevention Division has identified the Project site and the general site vicinity as being in Fire Zone 3 (AVSREIR, 2010). According to the Los Angeles County Ordinance Chapter 26.150, all unincorporated territory within the County is established as Fire Zone 3 by default, except where established otherwise. Based on the experience of the LACFD, extreme temperatures and high winds pose wildfire hazard conditions in the Project area (AVSREIR, 2010).

The Project site is located within the LACFD service area for Battalion 11. Battalion 11 encompasses 11 fire stations and is headquartered in Lancaster. Units from the closest available fire station typically provide emergency response. Ten stations are located within 20 miles of the Project site (Stations 78, 112, 157, 140, 130, 134, 33, 129, 117, and 135, in order of increasing distance); these ten stations could provide rapid response to a fire service call. The County bases the adequacy of fire services on performance measures, where the target response time for all 9-1-1 calls in the Project area (i.e., rural areas) is less than 12 minutes (County of Los Angeles, 2009). LACFD is currently meeting this response time and is expected to meet this target response time during FY 2009-2010 (County of Los Angeles, 2009). In the event of a significant incident, LACFD may dispatch units from any station in the entire department system. Station 78, which is approximately 8 miles southeast of the of the Project site, is the jurisdictional station (i.e., first responder) for the Project site. Station 78 employs three 24-hour on-duty daily staff and can be augmented with Call Fire Fighters (CFF) as needed. Stations 112, 140, and 157 are CFF stations, which are common in rural and remote areas of Los Angeles County. Call Fire Fighters are employed by the department to serve at rural stations that do not require full-time staffing and operate as first responders under the supervision and direction of Station 33 (Battalion 11 Headquarters). In the event of a significant fire incident, first responders are dispatched from their respective jurisdictions. In the event that resources are unavailable from the jurisdictional station, other Los Angeles County battalions and jurisdictions may be called upon as needed to respond to emergencies. Additionally, in accordance with the California Disaster and Civil Defense Master Mutual Aid Agreement, in the event of a catastrophic incident, fire protection services from departments outside Los Angeles County, including the Kern County Fire Department, would respond as needed. Section 5.12, Fire Protection Services, provides details regarding fire station names, locations, and service near the Project site (AVSREIR, 2010).

A Phase I ESA was performed on both the Western and Eastern Parcels and a Phase II on the Eastern Parcel to identify RECs that may potentially affect the Project and to characterize the nature and general magnitude of impacts associated with any REC. The ESAs are included in Appendix L. According to the ESA findings there is no evidence of historic storage of any chemicals or hazardous materials on the Eastern Parcel; however, small quantities of pesticides and fertilizers may have been applied during prior farming activities. Some of the agricultural pesticides and fertilizers potentially used on the Project site could leave low-level, residual chemical constituents in the soil; however, based on the small quantities, it is unlikely that the soil or ground water on the Project site has been adversely impacted by use of pesticides and fertilizers. The Western Parcel did exhibit some surface evidence of petroleum hydrocarbon release; however, soil borings indicated that any there was limited impact to surficial soil. The findings of the ESA address the County of Los Angeles Fire Department, Health and Hazardous Materials Division, comments dated September 20, 2010 (included in Appendix M). It has been determined that no further site assessment, soil mitigation or management strategies are necessary.

Impact Discussion

Impacts related to fire hazards have been analyzed using significance criteria derived from the County of Los Angeles Initial Study Checklist and the CEQA Appendix G checklist. Taking into consideration the significance criteria of both checklists (which are nearly identical), the Project could have a potentially significant effect if one or more of the following were to occur:

a. Is the project site located in a Very High Fire Hazard Severity Zone (Fire Zone 4)?

As shown on Figure FIRE-1, the Project site is not located in a Very High Fire Hazard Severity Zone. No impact would occur.

b. Is the project site in a high fire hazard area and served by inadequate access due to lengths, width, surface materials, turnarounds or grade?

The Project site is located in an area with fire hazard risk resulting from low rainfall and high temperatures, typical of desert conditions. The fire stations nearest to the Project site are shown on Figure FIRE-2. Primary access to the site is via SR 138 to 210th Street West; improvements will be made as part of the Project to provide access that complies with Fire Department and Department of Public Works requirements (refer to Appendix M for Fire Department letter). The Project is adequately served by the existing roadway systems, where the regional freeways serving the site consist of the I-5 freeway and SR 14, and the local roadways serving the site consist of SR 138, 210th Street West, and 220th Street West. The Project would not require installation of permanent left-turn lanes along the primary roadways because of low O&M traffic volumes (one to two permanent staff would work at the facility) and is not expected to require substantial roadway modifications (e.g., creation of new roads or turns, expansion of road widths, etc.). Impacts would be less than significant.

c. Does the project site have more than 75 dwelling units on a single access in a high fire hazard area?

The Project is a solar PV facility and does not include any dwelling units. No impact would occur.

d. Is the project site located in an area having inadequate water and pressure to meet fire flow standards?

A public water system for fire control does not exist in the Project area. Fire water storage facilities will be provided onsite as part of the Project. These facilities will include connections for fire truck hook-up and will be designed in accordance with Fire Department regulations. Impacts would be less than significant.

e. Is the project located in close proximity to potential dangerous fire hazard conditions/uses (such as refineries, flammables, explosives manufacturing)?

The Project site is generally surrounded by agricultural and open space uses. No potential dangerous fire hazard uses such as refineries, flammable, and/or explosives manufacturing have been identified in proximity to the Project site. The structure nearest the Project site is a residence approximately 4,000 feet from the western property boundary of the Western Parcel. No impact would occur.

f. Does the proposed use constitute a potentially dangerous fire hazard?

The Project involves construction and operation of the solar PV power generation facilities. Construction of the facility would require use of construction equipment, including vehicles, generators, and hazardous materials (e.g., fuels, lubricating oils, and welding materials), which pose potentially dangerous fire hazards. The temporary use of construction and maintenance equipment and associated flammable fuels would be managed in accordance with applicable county, state, and federal requirements. Mitigation Measure FIRE-1 requires a hazardous material and hazardous waste management program for both

construction and operation phases that would outline proper hazardous materials use, storage, and disposal requirements. Implementation of Mitigation Measure FIRE-1 would reduce potential impacts associated with fire hazards to less than significant.

Operation of the solar PV facility would require equipment that uses flammable oils, lubricants, and fuels, which pose a potential fire hazard. Overall maintenance of the facility would include proper storage of flammable materials, upkeep of operating equipment, and management of vegetative growth. The Project will comply with additional LACFD requirements. Implementation of Mitigation Measure FIRE-1, which requires the development of a Fire Protection and Prevention Plan, would reduce the potential impacts associated with fire hazards to less than significant. Therefore, the Project would not constitute a potentially dangerous fire hazard. Impacts would be less than significant with mitigation.

g. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

As described in f. above, the solar PV facility is made of materials that are inflammable. The Project site is located in a rural, but not a wildlands, area. The Project would not involve exposing structures or people to a significant risk of loss, injury, or death; therefore, impacts would be less than significant.

Mitigation and Residual Impact

Potential impacts related to fire hazards would be mitigated to an insignificant level through compliance with applicable codes, standards, and ordinances and by implementing the following mitigation measures:

FIRE-1. The Applicant will prepare and submit a Fire Protection and Prevention Plan to the LACFD for review and approval prior to issuance of a Grading Permit. The Plan will address construction and operation activities for the Project and will establish standards and practices that will minimize the risk of fire danger; in the case of fire, immediate suppression and notification would be provided. The Fire Protection and Prevention Plan will include, at a minimum, the following elements: procedures in the event of fire; hazardous material and hazardous waste management program; vegetation clearing; fire suppression equipment and routine maintenance; hazardous material storage, use, and disposal; employee safety training; and safety signage. The Project Sponsor will implement the approved Fire Protection and Prevention Plan throughout construction of the Project and throughout the operational life of the Project.

Additional conditions are suggested by the Fire Department Land Development Unit in the comment letter provided on September 20, 2010 (see Appendix M). The Project will comply with appropriate Fire Department Land Development Unit codes, ordinances and requirements according to the content of the comment letter.

Based on implementation of the above mitigation measure, the potential impacts associated with fire hazards would be reduced to a less than significant level.

Cumulative Impact

Other proposed projects within 5 miles of the Project site (see the Cumulative Project List in Appendix A and Figure CUMULATIVE-1) have the potential to result in cumulative impacts related to fire hazards. Through the implementation of Mitigation Measure FIRE-1, as well as compliance with LACFD requirements, Project-specific impacts affecting risks of fire would be less than significant. The Project's incremental effect would not be cumulatively considerable, and, therefore, the Project's cumulative effect would not be significant. It is assumed that other potential projects would be required to implement similar fire hazard reduction measures. Therefore, the cumulative impact that will result from the combination of the Project's incremental impact and the effects of other projects is not significant.

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by **fire hazard** factors?

☐ Potentially significant ☒ Less than significant with project mitigation ☐ Less than significant/ No impact

References

California Department of Forestry and Fire Protection (CAL FIRE). 2007. Draft Fire Hazard Severity Zones in LRA Map: Los Angeles County. September 24, 2007.

County of Los Angeles. 2010. Draft Environmental Impact Report, AV Solar Ranch One Project (AVSREIR). June.

County of Los Angeles Fire Department (LACFD). 2009. Los Angeles County Fire Code (Title 32). Accessed at: http://www.fire.lacounty.gov/FirePrevention/FirePrevCodes Ordinances.asp. July, 2009.

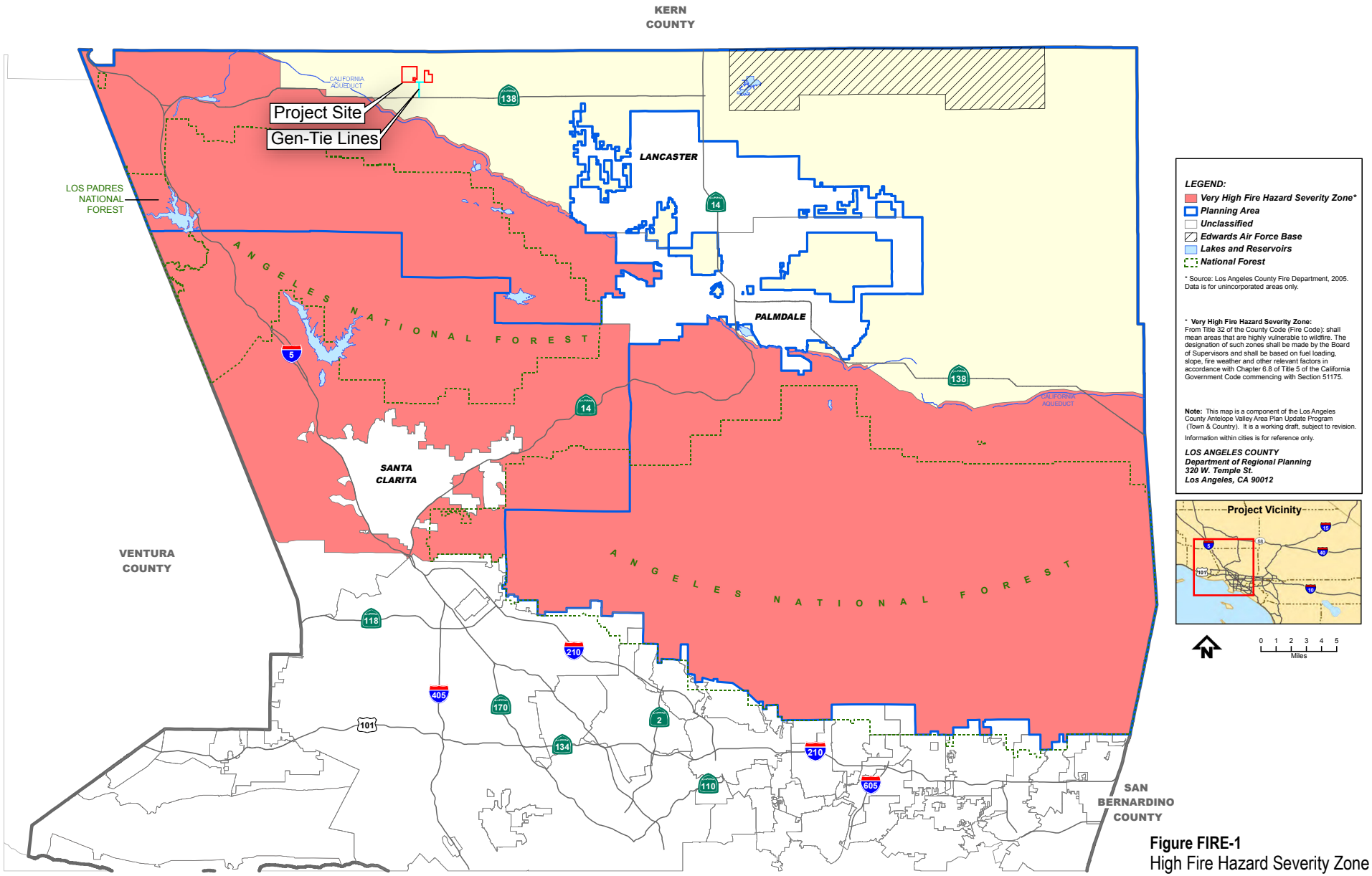
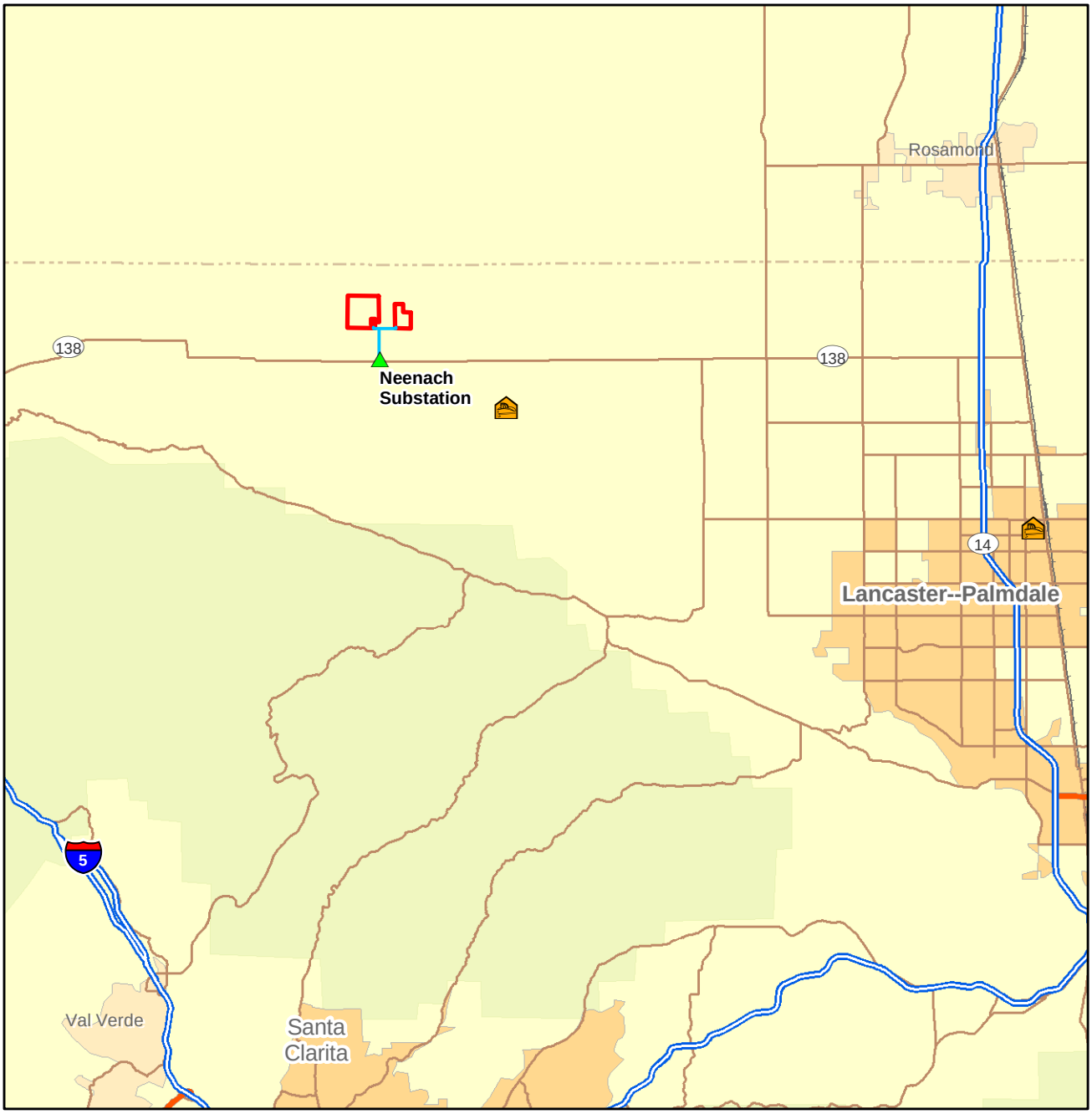


Figure FIRE-1
High Fire Hazard Severity Zone
Alpine Solar Project
July 2010

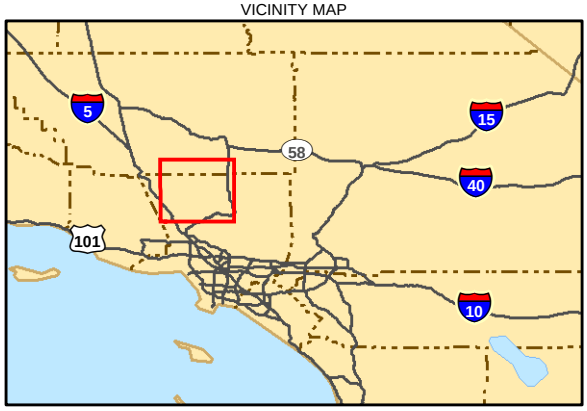
CH2MHILL



LEGEND

- Existing Substation
- Proposed Gen-tie Route (66 kV)
- Project Site
- Fire Station

VICINITY MAP



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Miles

FIGURE FIRE-2
Location of Fire Stations
Alpine Solar Project
July 2010

HAZARDS - 4. NOISE

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the project site located near a high noise source (airports, railroads, freeways, industry)?
b.	☐	☒	☐	Is the proposed use considered sensitive (school, hospital, senior citizen facility) or are there other sensitive uses in close proximity?
c.	☐	☐	☒	Could the project substantially increase ambient noise levels including those associated with special equipment (such as amplified sound systems) or parking areas associated with the project? (CEQA Checklist, XII. Noise, c.)
d.	☐	☐	☒	Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels without the project? (CEQA Checklist, XII. Noise, d.)
e.	☐	☐	☒	Other factors? 1. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? (CEQA Checklist, XII. Noise, a.) 2. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels? (CEQA Checklist, XII. Noise, b.) 3. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? (CEQA Checklist, XII. Noise, e.) 4. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels? (CEQA Checklist, XII. Noise, f.)

STANDARD CODE REQUIREMENTS

☒ Noise Control (Title 12 – Chapter 8)

☒ Uniform Building Code (Title 26 - Chapter 35)

☒ **MITIGATION MEASURES**

☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☒ Project Design ☐ Compatible Use

Regulatory Setting

This section provides an overview of federal, state, and local regulations related to noise issues applicable to the Project.

Federal

Occupational Safety and Health Administration, Occupational Noise Exposure; Hearing Conservation Amendment (FR 48 (46), 9738–9785 (1983)
This standard establishes mandates to protect employees from excessive noise exposure and requires a Hearing Conservation Program when routine exposure to high noise levels would occur.

U.S. Environmental Protection Agency in "Information of Levels on Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety." (EPA 550/9-74-004)
This document identifies safe levels of environmental noise exposure and is intended to "provide State and Local governments as well as the Federal Government and the private sector with an informational point of departure for the purpose of decision making." These guidelines are not adopted or recommended by the State of California or any local jurisdiction.

State

The California Department of Health Services has studied the correlation of noise levels and their effects on various land uses and has established guidelines for evaluating the compatibility of various land uses as a function of community noise exposure. Table Noise-1 presents general State of California guidelines for environmental noise levels and land use compatibility. These guidelines are used by many agencies, environmental planners, and acoustical specialists as a starting point to evaluate the potential for noise impact on and by the Project. The guidelines are also used to evaluate methods used for achieving noise compatibility with respect to nearby existing uses.

Occupational exposure to noise is regulated by the California Occupational Safety and Health Act in Title 8, Group 15, Article 105, Sections 5095–5100. The standard stipulates that protection against the effects of noise exposure will be provided when sound levels exceed 90 decibels (A-weighted scale) (dBA) over an 8-hour exposure period.

Local

Los Angeles County General Plan
The General Plan lists objectives and policies related to noise that include establishing maximum allowable noise exposure for land uses, minimizing conflicts between land uses, and regulating construction of sound barriers within the County limits.

Antelope Valley Areawide Plan
The Antelope Valley Areawide Plan designates areas within the 60-dBA noise contour from transportation sources such as airports, railroads, and major highways as Noise Management Areas. Plan policy for these areas calls for the reduction of noise impacts on adjacent land uses through both hazard avoidance actions, where practical, and hazard mitigation practices, in other cases. The Antelope Valley Areawide General Plan is currently in the process of being updated. However, no updated guidelines or standards related to noise are available.

Los Angeles County Code
The Noise Control section of the County Code has been established to reduce and restrict certain noise-producing activities. This includes addressing construction-related noise sources such as operation of any tools or equipment used in construction, grading, or demolition work. Noise-producing construction activities are restricted to the hours of 7:00 a.m. to 7:00 p.m. if they create a disturbance at residential or commercial properties. The County has established exterior and interior noise level standards for

non-transportation noise standards and transportation noise sources. All relevant noise standards are subject to the noise levels found at the property line. All internal combustion-engine-powered equipment "shall be equipped with suitable exhaust and air intake silencers in proper working order." A 5 dBA penalty is applied to noises that are considered impact noises. Table NOISE-1 identifies exterior noise standards, Table NOISE-2 identifies interior noise standards, and Table NOISE-3 identifies the maximum allowable noise levels for stationary equipment.

TABLE NOISE-1
Exterior Noise Standards

Noise Zone	Designated Noise Zone Land Use (Receptor Property)	Time Interval	Exterior Noise Level (dB)
I	Noise-sensitive area	Anytime	45
II	Residential properties	10:00 p.m. to 7:00 a.m. (nighttime)	45
		7:00 a.m. to 10:00 p.m. (daytime)	50
III	Commercial properties	10:00 p.m. to 7:00 a.m. (nighttime)	55
		7:00 a.m. to 10:00 p.m. (daytime)	60
IV	Industrial properties	Anytime	70
Source: County of Los Angeles, 2010a. Los Angeles, California County Code.			

TABLE NOISE-2
Interior Noise Standards

Noise Zone	Designated Land Use	Time Interval	Allowable Interior Noise Level (dB)
All	Multifamily	10 p.m. to 7 a.m.	40
	Residential	7 a.m. to 10 p.m.	45
Source: County of Los Angeles, 2010a. Los Angeles, California County Code.			

TABLE NOISE-3
Maximum Noise Levels for Stationary Equipment

	Single-family Residential	**Multi-family Residential**	**Semiresidential/ Commercial**
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	60dBA	65dBA	70dBA
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	50dBA	55dBA	60dBA
Source: County of Los Angeles, 2010a. Los Angeles, California County Code.			

Environmental Setting

Characteristics of Noise. Noise is generally defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or that interferes with communication, work, rest, recreation, and sleep. A decibel (dB) is a unit of measurement that indicates the relative intensity of a sound; dBA refers to the A-weighted sound level. Under controlled conditions in an acoustics laboratory, the trained healthy human ear is able to discern changes in sound pressure levels of 1 dBA when exposed to steady single-frequency signals in the mid-frequency range. Outside such controlled conditions, the average healthy ear can barely perceive noise level changes of 3 dBA. A change of 5 dBA is readily perceptible, and a change of 10 dBA is perceived as being twice or half as loud. A doubling of sound energy results in a 3 dBA increase in sound, which means that a doubling of sound energy (e.g., doubling the volume of traffic on a highway) would result in a barely perceptible change in sound pressure level. In addition, as noise spreads from a source, it loses energy so that the farther away the noise receiver is from the noise source, the lower the perceived noise level would be. Geometric spreading causes the sound level to attenuate or be reduced, resulting in a 6-dB reduction in the noise level for each doubling of distance from a single point source of noise to the noise-sensitive receptor of concern. Other noise mechanisms also result in further attenuation of noise with distance from a source; these include atmospheric absorption, ground effects, full or partial enclosures, and blocking of the direct line-of-sight transmission of noise by terrain and/or berms or barriers.

Various methods exist to evaluate noise for certain time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. The predominant rating scales for human communities in the State of California are the equivalent noise level (L_{eq}), the community noise equivalent level (CNEL), and the day-night average sound level (L_{dn}). These noise descriptors are all stated in terms of dBA. The A-weighting network filters some of the sound in the lower and higher frequencies to duplicate human hearing response. The L_{eq} is the sound pressure level equivalent to the average sound energy of time varying noise over a sample period. CNEL is the average, on an energy basis, of the hourly L_{eq} over a 24-hour period, with a 5-dBA weighting factor applied to the hourly L_{eq} for noise occurring from 7:00 p.m. to 10:00 p.m. (defined as evening hours) and a 10-dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as night hours). L_{dn} is similar to the CNEL scale, but without the adjustment for events occurring during the evening relaxation hours. CNEL and L_{dn} are usually within one dBA of each other and are commonly considered to be exchangeable. The noise adjustments are added to the noise events occurring during the evening and night to reflect the greater sensitivity of people to noise during these periods.

Ambient Noise Environment. The primary noise source near the Project site is traffic on SR 138. Traffic counts, per the most recent data from the California Department of Transportation (Caltrans), are approximately 13,000 vehicles/day on SR 138 near the Project site (http://www.dot.ca.gov/hq/

traffops/saferesr/trafdata/2008all.htm). Aircraft activity from the General William J. Fox Airfield, the Rosamond Skypark, and particularly the Edwards Air Force Base (AFB) is also audible on the Project site. Overall, the existing noise environment is compatible with the County's noise standards for new industrial developments.

The closest known noise-sensitive land use includes a residential property on the corner of 192nd Street and West Avenue C at a distance of approximately 4,000 feet from the Project site.

Impact Discussion

Impacts related to noise have been analyzed using significance criteria derived from the County of Los Angeles Initial Study Checklist and the CEQA Appendix G checklist. Taking into consideration the significance criteria of both checklists (which are nearly identical), the Project could have a potentially significant effect if one or more of the following were to occur:

a. Is the project site located near a high noise source (airports, railroads, freeways, industry)?

The Project site is not located within 5 miles of any airports, railroads, or industrial facilities. The primary noise source near the Project site is traffic on SR 138, which is located 1 mile south. No impacts would occur.

b. Is the proposed use considered sensitive (school, hospital, senior citizen facility) or are there other sensitive uses in close proximity?

The Project is a solar PV facility and, therefore, is not considered a sensitive use. No sensitive uses (school, hospital, senior citizen facility*)* are nearby; the closest sensitive receptor is a residence approximately 4,000 feet from the exterior perimeter of the Project site. No impact would occur.

c. Could the project substantially increase ambient noise levels including those associated with special equipment (such as amplified sound systems) or parking areas associated with the project?

The following presents a discussion of the characteristics of noise, applicable noise regulations, and the existing ambient noise environment at the Project site. Both the short- and long-term impacts of the Project are evaluated relative to the existing noise environment.

Short-term Noise Impacts. Two types of short-term noise impacts would occur during Project construction. The first type would result from the increase in traffic flow on local streets associated with the transport of workers, equipment, and materials to and from the Project site. Heavy equipment for construction is expected to be moved to the site and remain for the duration of the construction period. An increase of approximately 240 commuter round trips onto area roadways per day for construction workforce during Project construction would result in a small percentage increase in total traffic. In addition, a short-term intermittent increase in ambient noise levels would occur from trucks arriving at and departing from the Project site during construction.

The second type of short-term noise impact is related to the noise generated by construction equipment operating on the Project site. Construction is performed in discrete steps, each of which has its own mix of equipment and, consequently, has its own noise characteristics. These various sequential phases would change the character of noise generated on the site; therefore, the noise levels surrounding the site would change as construction progresses. Despite the variety in type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table NOISE-4 lists typical construction equipment noise levels recommended for noise impact assessments, based on a distance of 50 feet between the equipment and a noise receptor.

Table PROJECT-1, in the Project Description section of this document, highlights the type of equipment that will be used for the Project, the purpose, and the duration in which the equipment will be used.

TABLE NOISE-4
Typical Construction Equipment Maximum Noise Levels

Type of Equipment	Range of Maximum Sound Levels (dBA at 50 feet)	Suggested Maximum Sound Levels for Analysis (dBA at 50 feet)
Pile Drivers	81 to 96	93
Rock Drills	83 to 99	96
Jackhammers	75 to 85	82
Pneumatic Tools	78 to 88	85
Pumps	74 to 84	80
Scrapers	83 to 91	87
Haul Trucks	83 to 94	88
Portable Generators	71 to 87	80
Rollers	75 to 82	80
Dozers	77 to 90	85
Tractors	77 to 82	80
Front-end Loaders	77 to 90	86
Hydraulic Backhoe	81 to 90	86
Hydraulic Excavators	81 to 90	86
Graders	79 to 89	86
Air Compressors	76 to 89	86
Trucks	81 to 87	86
Source: Bolt, Beranek & Newman, 1987.		

Construction of the Project will require the use of earthmovers such as scrapers, loaders and graders, water trucks, and pickup trucks. The typical maximum noise level generated by each scraper on the Project site is assumed to be 87 dBA maximum noise level (L_{max}) at 50 feet from the operating earthmover. The maximum noise level generated by hydraulic backhoes is approximately 86 dBA L_{max} at 50 feet; the maximum noise level generated by water and other trucks is approximately 86 dBA L_{max} at 50 feet from these vehicles.

Pile driving would be the selected method to install the foundations of the solar PV modules. Vertical hydraulic vibratory pile drivers would be the most likely pile driver model selected for construction. The noise emissions for these drivers are significantly lower than noise emissions from other pile driving equipment. Typical pile driver noise is 95 to 100 dBA at a distance of 50 feet. Pile drivers are classified as impact devices in the Los Angeles County Noise Ordinance; the applicable standard is therefore 55 dBA. Noise modeling analysis obtained from the AV Solar Ranch One EIR (County of Los Angeles, 2010b)

indicates the minimum distance from pile driving operations to a noise-sensitive receiver needed to comply with the 55-dBA standard is 3,000 feet. The closest noise-sensitive land use includes a residential property on the corner of 192nd Street and West Avenue C at a distance of approximately 4,000 feet from the Project site.

Because of the short-term nature of this construction-related impact, implementation of Mitigation Measure NOISE-1 would reduce this impact to a less than significant level, in accordance with County standards limiting construction noise.

Long-term Noise Impacts. As outlined in the ambient noise environment discussion, the existing noise environment is compatible with the County's standards for industrial developments, such as a solar PV facility. Therefore, existing noise sources would be considered less than significant and are not further analyzed. As mentioned in the Characteristics of Noise discussion, a doubling of sound energy (e.g., doubling the volume of traffic on a roadway) would result in a barely perceptible change in sound level. Implementation of the Project would not result in a doubling of vehicle trips on roadways in the Project vicinity, as only one to two permanent staff would be required to operate the facility. Therefore, compared with the existing traffic noise levels in the Project vicinity, implementation of the Project would not result in a perceptible change in traffic noise on roadways near the Project site. Therefore, Project-related traffic noise impacts would be less than significant.

Stationary Noise Impacts. The long-term operations of the Project should not result in substantial increases in existing levels at locations surrounding the Project site. The closest noise-sensitive land use includes a residential property located at the intersection of 192nd Street and West Avenue C that is approximately 4,000 feet from the Project site. At this distance, the noise generated by stationary noise sources associated with the solar PV generating facility should not result in a perceptible change in ambient noise levels at these noise-sensitive receptors. Audible increases in noise levels generally refer to a change of 3 dBA or greater, since this level has been found to be barely perceptible in exterior environments. The Project would not result in substantial audible increases in noise; therefore, development of the Project would result in a less than significant stationary noise impact on existing land uses in the Project vicinity.

Corona Noise. One of the electrical effects of high-voltage transmission lines is corona. Corona is the ionization of the air that occurs at the surface of the energized conductor and suspension hardware resulting from very high electric field strength at the surface of the metal during certain conditions. Corona may result in radio and television reception interference, audible noise, light, and production of ozone. Corona is generally a principle concern with transmission lines of 345 kV and higher. Noise is also generally associated with foul weather conditions. Because the gen-tie and collector transmission lines are 66 kV or lower, corona noise is not anticipated to be significant.

After completion of construction activities, no substantial permanent increase in ambient noise levels in the Project vicinity would occur. The Project would not generate enough traffic to create a perceptible change (at least 3 dBA) in traffic noise near the Project site. Project operational noise would be minimal at offsite locations, and impacts would be less than significant.

d. Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels without the project?

Please refer to the discussion in c. above.

e.1. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Please refer to the discussion in c. above.

e.2. Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?

The use of earthmoving equipment during the site preparation phase of construction can generate perceptible groundborne vibration near a Project site. Installation of the PV modules would require a pile driver. Typical impact pile drivers generate vibration levels of 104 velocity decibels (VdBs) at a distance of 25 feet (AVSREIR, 2010). The vertical hydraulic pile driver, which is the most likely model to be used, would generate lower levels of groundborne vibration than a typical impact pile driver. Vibration levels from a typical impact pile driver would exceed the 65 VdB impact criterion level at any noise-sensitive receiver within a distance of 500 feet. The closest noise-sensitive receiver is 4,000 feet from the Project boundary. Impacts would be less than significant.

e.3. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

And

e.4. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

The Project is not located within an airport land use plan or within 2 miles of a public airport or public use airport. The General William J. Fox Airfield is located approximately 14 miles east of the Project site. The Rosamond Skypark is located approximately 15 miles northeast of the Project site, and Edwards AFB is located approximately 20 miles east of the Project site.

There is a private "landing strip" noted on the USGS Quad sheet southeast of the Neenach Substation. However, it is unclear from Google Earth aerial images (Google Earth, 2006) and field visits by CH2M HILL staff in May and June 2010 whether this landing strip is active. Given the historical agricultural use of the area, it is likely that this landing strip was used for crop dusting or other related agricultural purposes. The nearest known privately owned airport is the Skyottee Ranch Airport, which is located approximately 5 miles to the northeast of the Project area. The construction workers and occasional operations workers would not be exposed to excessive noise levels as a result of small airplanes landing and taking off. Impacts would be less than significant.

Mitigation and Residual Impact

Potential impacts related to noise would be mitigated to an insignificant level: (1) through compliance with applicable codes, standards, and ordinances; (2) by preparing and implementing a final geotechnical report containing site-specific recommendations for the Project; and (3) by implementing the following mitigation measure:

NOISE-1. Construction equipment and vehicles will be fitted with efficient and well-maintained mufflers to reduce noise emission levels. In addition, the Project construction equipment and vehicles will be maintained according to the manufacturers' instructions and recommendations.

Based on implementation of the above mitigation measure, the potential impacts associated with noise would be reduced to a less than significant level.

Cumulative Impact

As noted in the potential cumulative projects list in Appendix A and shown on Figure CUMULATIVE-1, several projects could be constructed and operating at the same time as the Alpine Solar Project. Most notable on this list, for both project type and similarity of construction methods, are the AV Solar Ranch One project and the Fairmont Butte Motorsports Park. However, both these Projects were found

to be cumulatively insignificant. Given that operations of the Alpine Solar Project would be barely audible, only construction could potentially contribute to significant noise impacts. However, given the relative distance between the AV Solar Ranch One project (approximately 3 miles), the Fairmont Butte Motorsports Park project (approximately 5 miles), and the Alpine Solar Project, the cumulative impact that will result from the combination of the Project's incremental impact and the effects of other projects is not significant.

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be adversely impacted by **noise**?

☐ Potentially significant ☒ Less than significant with project mitigation ☐ Less than significant/ No impact

References

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County of Los Angeles. 2010. Draft Environmental Impact Report, AV Solar Ranch One Project (AVSREIR). June.

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RESOURCES - 1. WATER QUALITY

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the project site located in an area having known water quality problems and proposing the use of individual water wells?
b.	☒	☐	☐	Will the proposed project require the use of a private sewage disposal system?
	☐	☒	☐	If the answer is yes, is the project site located in an area having known septic tank limitations due to high groundwater or other geotechnical limitations *or* is the project proposing on-site systems located in close proximity to a drainage course?
c.	☐	☒	☐	Could the project's associated construction activities significantly impact the quality of groundwater and/or storm water runoff to the storm water conveyance system and/or receiving water bodies?
d.	☐	☐	☒	Could the project's post-development activities potentially degrade the quality of storm water runoff and/or could post-development non-storm water discharges contribute potential pollutants to the storm water conveyance system and/or receiving bodies?
e.	☐	☐	☒	Other factors? Violate any water quality standards or waste discharge requirements? (CEQA Checklist, IX. Hydrology and Water Quality. a.) 1. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)? (CEQA Checklist, IX. Hydrology and Water Quality. b.) 2. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site? (CEQA Checklist, IX. Hydrology and Water Quality. c.) 3. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? (CEQA Checklist, IX. Hydrology and Water Quality. d.)

STANDARD CODE REQUIREMENTS

☒ Industrial Waste Permit
☒ Plumbing Code – Ordinance No.2269
☒ Health Code – Ordinance No.7583, Chapter 5
☒ NPDES Permit Compliance (DPW)

☒ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design ☐ Compatible Use

Regulatory Setting

This section provides an overview of federal, state, and local regulations related to water quality issues applicable to the Project.

Federal

Federal Clean Water Act

The Clean Water Act (CWA) (33 U.S.C. Section 1251 et seq.), formerly the Federal Water Pollution Control Act of 1972, was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface water. Those discharges are regulated by the NPDES permit process (CWA Section 402).

In California, NPDES permitting authority is delegated to, and administered by, the nine RWQCBs. For the Project, the Lahontan Regional Water Quality Control Board (LRWQCB) has NPDES General Permit enforcement authority.

Section 303(d) of the Clean Water Act

When designated beneficial uses of a particular receiving water body are compromised by impaired water quality, Section 303(d) of the CWA requires identifying and listing that water body as “impaired.” Once a water body has been deemed impaired, a Total Maximum Daily Load (TMDL) must be developed for the impairing pollutant(s). A TMDL is an estimate of the total load of pollutants from point, nonpoint, and natural sources that a water body may receive without exceeding applicable water quality standards (with a “factor of safety” included). Once established, the TMDL allocates the loads among current and future pollutant sources for the impaired water body.

States are required to compile this information in a list and to submit the list to EPA for review and approval. This list is known as the Section 303(d) list of impaired waters. As part of this listing process, states are required to prioritize waters and watersheds for future development of TMDL requirements. The SWRCB and RWQCBs have made ongoing efforts to monitor and assess water quality, to prepare the Section 303(d) list, and to develop TMDL requirements. The Project would not be expected to disrupt current or designated beneficial uses of water bodies.

In addition to the Section 303(d) listings, states must submit water quality reports to EPA every 2 years under 305(b) of the CWA. The National Water Quality Inventory Report to Congress (305[b] report) is the primary vehicle for informing Congress and the public about general water quality conditions in the United States. This document characterizes water quality, identifies widespread water quality problems of

national significance, and describes various programs implemented to restore and protect our waters. The National Assessment Database summarizes information submitted electronically by the states (EPA, 2009).

Section 304(a) of the Clean Water Act
This section requires states to adopt water quality standards for receiving water bodies and to have those standards approved by EPA. These water quality standards consist of designated beneficial uses for a particular receiving water body (e.g., wildlife habitat, agricultural supply, fishing, etc.), along with water quality criteria necessary to support those uses. Water quality criteria consist of either prescribed concentrations or levels of constituents such as lead, suspended sediment, and fecal coliform bacteria, or narrative statements describing the quality of water that supports a particular beneficial use. Because California had not established a complete list of acceptable water quality criteria, EPA established numeric water quality criteria for certain toxic constituents in surface waters with human health or aquatic life designated uses in the form of the California Toxics Rule (CTR) (40 C.F.R. §131.38). The final rule establishes ambient water quality criteria for priority toxic pollutants in the State of California.

Title 40 of the Code of Federal Regulations, Part 112 (40 CFR 112)
EPA has issued regulations governing the management of facilities with aboveground storage tanks (ASTs) and underground storage tanks (USTs) with significant quantities of oil-containing products. State and local regulations are required to meet or exceed the federal regulations.

State

Porter-Cologne Water Quality Control Act (Water Code, §13000 et seq.)
California's primary statute governing water quality and water pollution issues with respect to both surface water and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Porter-Cologne Act). The Porter-Cologne Act grants the SWRCB and the RWQCBs the power to protect water quality.

The Porter-Cologne Act also grants the SWRCB and the RWQCBs authority and responsibility to adopt plans and policies, to regulate discharges of waste to surface and groundwater, to regulate waste disposal sites, and to require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substance, sewage, or oil or petroleum product.

Basin Plan for the Lahontan Region
The Basin Plan for the Lahontan Region (South and North regions) is administered by the LRWQCB. The Basin Plan for the Lahontan Region is the master policy document that contains descriptions of the legal, technical, and programmatic bases of water quality regulation in the Lahontan Region. The Basin Plan sets forth the water quality standards for surface and groundwater, defines types of water quality problems, and makes recommendations to address such problems. In addition, the Basin Plan summarizes water quality programs and identifies monitoring activities for the water resources of the area (LRWQCB, 1995).

Specific criteria are provided for the larger, designated water bodies within the region; general criteria or guidelines are provided for ocean waters, bays and estuaries, inland surface waters, and groundwater. In general, the narrative criteria require that degradation of water quality does not occur as a result of increases in pollutant loads that would adversely impact the designated beneficial uses of a water body. For example, the Basin Plan requires that "[i]nland surface waters shall not contain suspended or settleable solids in amounts which cause a nuisance or adversely affect beneficial uses as a result of controllable water quality factors." Water quality criteria apply within receiving waters as opposed to applying directly to runoff; therefore, water quality criteria from the Basin Plan are utilized as benchmarks to evaluate the potential ecological impacts of Project runoff on the receiving waters of the Project.

The Basin Plan is periodically updated. Prior to preparation and implementation of Project-related construction SWPPPs, the LRWQCB would be contacted to determine whether the Basin Plan and associated beneficial uses, 303(d) listings, or TMDLs have been updated for the waterbodies potentially impacted by the Project, as applicable.

Water Quality Control Plan for the Lahontan Region
The California Regional Water Quality Control Board provided comments on October 7, 2010 suggesting guidelines for the minimization of alterations to existing drainage paths (See RWQCB Comment Letter, Appendix M). Chapter 4.8 of the Water Quality Control Plan for the Lahontan Region is included as part of that comment letter. Implementation of Guidelines 1 through 16 of Chapter 4.8 the plan would ensure that grading will not impact existing drainage paths**.**

California Water Code §13260
The California Water Code §13260 requires that any person discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the State, other than into a community sewer system, must submit a report of waste discharge to the applicable RWQCB. Any actions related to the Project that would be applicable to California Water Code §13260 would be reported to the LRWQCB.

NPDES General Permit and Waste Discharge Requirements for Discharges of Stormwater Associated with Construction Activity, Order No. 99-08-DWQ
Pursuant to the CWA Section 402(p) requiring regulations for permitting of certain stormwater discharges, the SWRCB has issued statewide general NPDES permit and waste discharge requirements for stormwater discharges from construction sites. (NPDES No. CAS000002; California Water Resources Control Board Resolution No. 2001-046; Modification of Water Quality Order 99-08-DWQ SWRCB NPDES General Permit for Stormwater Discharges Associated with Construction Activity, adopted by the SWRCB on April 26, 2001).

Under this permit, discharges of stormwater from construction sites with a disturbed area of one or more acres (effective March 2003) are required to either obtain individual NPDES permits for stormwater discharges or to be covered by the general permit. Coverage under the general permit is accomplished by completing and filing a Notice of Intent with the SWRCB. Each applicant under the general permit must ensure that a SWPPP is prepared prior to grading and is implemented during construction. The primary objective of the SWPPP is to identify, construct, implement, and maintain BMPs in order to reduce or eliminate pollutants in stormwater discharges and in order to reduce or eliminate authorized non-stormwater discharges from the construction site during construction.

Standardized Urban Stormwater Mitigation Plan
A municipal stormwater NPDES permit issued to Los Angeles County and 85 cities by the Los Angeles County RWQCB on July 15, 1996, required the development and implementation of a program addressing stormwater pollution issues in development planning for private projects. On December 13, 2001, the RWQCB issued a new NPDES permit (Los Angeles County MS4 Permit) updating these program requirements.

The SUSMP was developed as part of the municipal stormwater program to address stormwater pollution as required by the NPDES permit. The SUSMP contains a minimum of the BMPs required to be used for a designated project.

Notice of Intent to Comply with Wastes Discharge Requirements, Order No. R6T-2003-0004
A Notice of Intent (NOI) must be filed with the LRWQCB to comply with the terms of the General Waste Discharge Requirements for Minor Streambed/Lakebed Alteration Projects (excluding the Lake Tahoe Hydrologic Unit). This is in accordance with Order No. R6T-2003-0004 for dredged and/or fill discharges

to solely waters of the State that are (1) greater than 0.2 acre, (2) 400 linear feet of stream bank or shoreline, and (3) 50 cubic yards of dredged material.

Local

Within Los Angeles County, surface water and groundwater quality and use are regulated by the LACDPW. The LACDPW has Master Plans for many of its large flood control facilities. Water quality in the Project area within Los Angeles County is also under the jurisdiction of the LRWQCB. Within Kern County, surface water and groundwater quality and use are regulated by the County of Kern Engineering and Survey Service. Water quality in Kern County is also under the jurisdiction of the LRWQCB.

Local water quality control plans applicable to the Project include the LRWQCB Water Quality Control Plan (Basin Plan). This plan defines water quality objectives for the jurisdiction. The Regional Board regulates the sources of water quality problems that could result in the impairment of beneficial uses or degradation of water quality, including both point sources of pollution and non-point sources of pollution (LRWQCB, 1995).

County Code Title Chapter 12.80, Stormwater and Runoff Pollution Control
Chapter 12.80 of the Los Angeles County Municipal Code requires that applicable permits are obtained before discharging into a storm drain or water source.

County Code Title 12 Chapter 12.84, Low Impact Development Standards
The purpose of the LID standards is to provide for sustainable growth while preserving the characteristics of the County's watersheds, drainage paths, water supplies, and natural resources. Chapter 12.84 guides the use of structural devices, engineered systems, vegetated natural designs, and education in order to distribute stormwater and urban runoff across a development site.

County Code Title 11 Chapter 11.38, Water and Sewers
Chapter 11.38 (Water and Sewer) specifies requirements for operation of existing wells along with construction and operation of new wells.

Environmental Setting

The Project site is located in the western Antelope Valley, in the Mojave Desert of Southern California. The Mojave Desert is characterized by barren mountain ranges and isolated hills with broad alluvial-filled valleys. A natural drainage channel runs east-west across the northern portion of the Western Parcel and across the northwestern corner of the Eastern Parcel. As shown on the site plan, the Project site naturally slopes, and therefore water sheet-flows to this drainage channel. The elevation of the Project site ranges from approximately 2,730 to 2,765 feet amsl. The local climate is dry, with rainfall averaging less than 10 inches per year, and no natural perennial surface waters are in the region.

The site is located in the Antelope Valley Groundwater Basin (AV Basin) (Figure WATER-1), which is part of the southwestern portion of the South Lahontan Hydrologic Region (DWR, 2004). Until fall of 2009, the site was under intensive agricultural production with water use of 2,137 AFY, supplied by onsite groundwater wells. The Project site has five water wells: two agricultural wells and one domestic well are on the Western Parcel, and one agricultural and one domestic well are on the Eastern Parcel. Water supply for the project (construction and operation) would be groundwater pumped from the existing onsite production wells. During construction, up to approximately 300 AF of water may be required for soil conditioning and dust suppression. Water use during construction would be temporary. Operation water use will be less than 2 AFY, which includes water for periodic PV module washing and for domestic (potable) water.

Groundwater

The following discussion presents a summary of Antelope Valley groundwater hydrogeology, including anticipated project conditions. The discussion of historical water requirements, water supplies, sustainable groundwater yield, and water availability is copied from *Water Requirements and Groundwater Supply – AV Solar Ranch 1*, prepared June 1, 2010 by Luhdorff & Scalmanini Consulting Engineers (Luhdorff & Scalmanini, 2010). The report was prepared for the nearby AV Solar Ranch 1 project, and is believed by LADRP to represent the best available description of regional groundwater supplies as they apply to the ASP. This report is included in Appendix D.

Hydrogeologic Setting

The Project site is located in the southwestern portion of the South Lahontan Hydrologic Region. This hydrologic region occupies approximately 21.2 million acres in southern and eastern California. This region is geologically and hydrologically varied and includes the areas with the highest and lowest elevations in the continental United States: Mount Whitney and Death Valley, respectively. The South Lahontan Hydrologic Region is bounded on the west by the Sierra Nevada crest, to the north by the watershed divide between Mono Lake and the East Walker River drainages, to the east by the Nevada border, and to the south by the crests of the San Gabriel and San Bernardino mountains. The South Lahontan Hydrologic Region includes the Owens, Mojave, and Amargosa river systems, the Mono Lake drainage system, and many other internally drained basins (RWQCB-LR, 2004).

The South Lahontan Hydrologic Region is subdivided into 76 groundwater basins that cover approximately 18,100 square miles (DWR, 2004). The Project site area is located in the AV Basin (6-44). This basin occupies 1.1 million acres; it is bounded to the northwest by the Garlock fault zone at the base of the Tehachapi Mountains, and is bounded to the southwest by the San Andreas fault zone at the base of the San Gabriel Mountains (DWR, 2004). The basin is also bound to the east by ridges, buttes, and low hills and to the north by the Fremont Valley Groundwater Basin.

According to DWR (2004), there are two primary aquifers in the AV Basin, the lower and upper aquifers, with a specific yield ranging from 1 to 30 percent. The upper aquifer is the primary source of groundwater for the basin (DWR, 2004). However, a study by USGS (2003), which culminated in a groundwater model for the AV Basin, identified three water-bearing zones (an upper, middle, and lower aquifer) in some areas of the basin. USGS (2003) describes the upper aquifer as unconfined to confined with a storage coefficient of 2.5×10^{-4}, the middle aquifer as present between 1,950 and 1,550 feet amsl with a storage coefficient of approximately 2.0×10^{-4}, and the lower aquifer as present between 1,550 feet amsl and the underlying bedrock with a storage coefficient of approximately 10.0×10^{-4}. The total storage capacity has been estimated to be 70 million AF (DWR, 2004). Past studies estimated the average natural annual recharge for the AV Basin at approximately 48,000 AF (DWR, 2004). The latest published pumping rate for the AV Basin is estimated to be approximately 90,000 AFY (Carollo, 2005).

Water Wells

Wells at the project site draw groundwater from the Neenach subbasin of the AV Basin. Groundwater in the Neenach subbasin generally moves to the northeast into the confined aquifer of the Lancaster subbasin, which is the largest subbasin in the AV Basin (USGS, 2003). The Lancaster subbasin includes most of the major urban centers of the Antelope Valley (such as Lancaster, Quartz Hill, Rosamond, and Palmdale). These cities and associated water districts use groundwater in addition to surface water deliveries from the SWP. Depth to groundwater in the Neenach subbasin is relatively high for the AV Basin, ranging from 150 to 350 feet below ground surface (USGS, 2003). At the project site, the static groundwater is present at approximately 2,670 feet amsl (USGS, 2003).

The site contains three agricultural production wells and two domestic wells. Groundwater for the project will be supplied by one or more of the agricultural production wells, which are described in Table WATER-1.

TABLE WATER-1
Summary of Existing Wells at the Project Site

Groundwater Well	Location	Perforation Depth	Historical Use (AFY)	Projected Use (AFY)*
Well 08N15W07N002S (agricultural production well; not currently in use)	Along West Avenue C (southwest corner of Western Parcel)	Unavailable	None	0-2
Well 08N15W07P001S (agricultural production well)	Along West Avenue C on Western Parcel	300 to 750 feet below top of casing	1,137	0-2
Well 08N15W08L001S (agricultural production well)	East of 210th Street Western on Eastern Parcel	Unavailable	1,000	0-2

AFY: acre-feet per year

* Projected use is based on the water requirements of the project during operation (2 AFY). A range is shown among the three available agricultural production wells because it is unknown at this time which of these wells would be used for the project's water supply. Water use during operation would be fixed at a maximum of 2 AFY over the 20-year projection period.

Historical Water Requirements

Total historical water requirements in the Antelope Valley, consisting of agricultural, municipal and industrial (M&I), and environmental water uses, are illustrated in Figure WATER-2. The total water requirements have varied greatly throughout the historical period, primarily affected by agricultural water use. During the period of agricultural expansion through 1950, the Antelope Valley experienced the greatest increase in water requirements from early development to nearly 360,000 AFY. Agricultural water demand comprised the vast majority of the total requirements through that period, increasing to nearly 350,000 AFY by 1950; at that time, M&I use was about 10,000 AFY. During the period of peak agricultural activity through the early 1970s, total water requirements remained high, between about 300,000 and 370,000 AFY. Through that period, agricultural water use was slightly declining, and M&I water requirements were gradually increasing, from about 10,000 to 30,000 AFY.

With the subsequent significant decline in agricultural activity through the early 1990s, total water requirements substantially decreased, from approximately 300,000 to about 150,000 AFY, primarily as a result of the substantial decline in agricultural water demand from about 260,000 AFY to about 70,000 AFY. During the latter half of that period of agricultural decline, M&I water requirements increased from about 30,000 AFY to about the same as the agricultural water demand, about 70,000 AFY, by 1990. Both agricultural and M&I water requirements increased at comparable rates throughout the 1990s. By 2000, total water requirements, by then including a small amount for environmental uses, had increased to approximately 255,000 AFY. Since 2000, total water demand has remained generally stable, a result of a generally offsetting increase in M&I water use and decrease in agricultural water use. By 2006, the agricultural water demand was about 114,000 AF; total M&I water requirements were about 118,000 AF (105,000 AF for all uses by the main purveyors and about 13,000 AF of municipal-type use by mutual, small private and rural residential users); and environmental water use was about 9,600 AF to maintain wetlands and recreational lakes.

Water Supplies

Prior to 1972, essentially all water requirements in the Antelope Valley were met by local groundwater, augmented by a small amount of local surface water, generally less than 3,000 AFY, diverted from Littlerock Creek. Beginning in 1972, supplemental water has been imported into the Antelope Valley from the SWP to augment the local water supplies. Water is imported from the SWP, with contract amounts totaling 165,000 AFY (although that total amount is not available in all years).

Littlerock Creek diversions have been stable since 1946, typically providing a total of 1,000 to 3,000 AFY of local surface water toward agricultural and M&I water supplies. There have been only a few years, in the 1960s and in 2002, when water was not available for diversion. Beginning in the mid-1990s, coincident with the dam rehabilitation project (during which time the dam was also raised 12 feet, increasing the reservoir's capacity), total diversions have typically exceeded 3,000 AFY and in some years have approached 7,000 AFY, all toward M&I water supplies.

Beginning in 1976, about 27,000 AF of SWP water were delivered for agricultural irrigation supplies. Imported SWP water for irrigation notably increased into the early 1980's, reaching a peak of nearly 64,000 AF in 1981. Since then, deliveries of SWP water for agricultural irrigation have been notably smaller, approaching 40,000 AF in only one year (1982) and less than 30,000 AF in all other years. Over the decade through 2006, deliveries of SWP water for agricultural use ranged between approximately 7,000 and 28,000 AFY and averaged about 15,000 AFY. They increased to nearly 18,000 AF in 2007, and then substantially declined to near 3,500 AF in 2008.

SWP deliveries for municipal water supply nearly linearly increased since the early 1980's, to about 70,000 AFY in 2006 and 2007, followed by decreased delivery of about 52,000 AF in 2008. Combined SWP deliveries for agricultural and municipal water supply reached a peak of nearly 90,000 AF in 2007, but declined to about 55,000 AF in 2008 (Figure WATER-3).

Overall, groundwater pumping to meet both agricultural and M&I water requirements in the Antelope Valley has ranged from as much as 370,000 to 380,000 AFY in the 1950's-1960's to slightly less than 90,000 AFY by 1990. Since then, total groundwater pumping has increased, as high as about 175,000 AFY by 2002, followed by a decline to nearly 150,000 AF in 2005, and to slightly less than 135,000 AF in 2006 and 2007, followed by an increase to about 160,000 AF in 2008 (Figure WATER-4).

Recycled water from both LACSD14 (Lancaster) and LACSD20 (Palmdale) water reclamation plants has been utilized for agricultural irrigation and environmental water use in the Antelope Valley since at least the early 1990s. Use of recycled water for irrigation and environmental water supply has steadily increased over recent time, from approximately 1,100 and 3,800 AFY for irrigation and environmental uses, respectively, in 1988, to about 11,800 and 9,600 AFY, respectively, in 2006. Total recycled water use for irrigation and environmental supplies in the AVAA is now about 20,000 AFY (Figure WATER-5).

Sustainable Groundwater Yield

The sustainable yield of a groundwater basin is considered to be the amount of pumping that, for given land use conditions, produces return flows which, in combination with other recharge, result in no long-term depletion of groundwater storage. Based on a combination of estimated natural recharge to the groundwater basin, utilization of supplemental water and its contribution to groundwater recharge, and land use practices in the Antelope Valley that utilize water in different ways and thus contribute different amounts of return flows as contributions to groundwater recharge, estimates of sustainable (production) yield have been made for both "native" and "supplemental" conditions. Under native conditions, return flows derive from the use of local groundwater only; those return flows are the only source of recharge other than natural recharge that derives from local precipitation and runoff within the watershed

surrounding the Antelope Valley. Under supplemental conditions, return flows include the use of local groundwater plus any purposeful recharge of supplemental water.

Since agricultural and municipal-type land uses contribute different return flow fractions that, in turn, contribute to the sustainable yield of the groundwater basin, sustainable yield is not necessarily a constant and can thus be a variable that is dependent on prevailing land use in the basin. To capture the variations in the preceding factors, which are commonly described as part of cultural conditions in a given basin, two sets of sustainable yields were prepared for the Antelope Valley: one set for different mixes of land use under "native" conditions, where only natural recharge is the primary source of sustainable groundwater supply in the basin; and a second set, also for different mixes of land use but under "supplemental" conditions, where natural recharge is augmented by recharge from the use of supplemental water supplies such as has occurred with the importation of SWP water since the 1970's.

Throughout the periods considered for estimating sustainable yield of the AV Basin, the respective proportions of agricultural and municipal-type land uses have been comparable, with both increasing in the late 1990's, followed by some agricultural decline in the 2000's and general stability in municipal-type land use over that same time. Under "native" conditions, largely independent of variations in prevailing land uses since the mid-1990's, the native sustainable yield of the AV Basin is about 82,300 AFY. However, for the five-year period prior to the filing of the current adjudication, average use of supplemental water was nearly 68,000 AFY. Its use augmented natural recharge sufficiently to support total sustainable groundwater yield of nearly 108,000 AFY. Since then, use of supplemental water increased to an average of about 73,000 AFY over the 1996-2005 period, and to 73,500 AF in 2005; those uses augmented natural recharge to support increases in total sustainable yield to about 110,000 AFY. While "rights" to all the total sustainable yield are not equally distributable to all interests in the Antelope Valley, in part because separate priorities attach to the increases attributable to supplemental water use, both the "native" sustainable yield of 82,300 AFY and the total sustainable yield of 110,000 AFY are used in order to place the water requirements of the proposed Alpine Solar project in a quantitative context.

Water Availability

The sustainable groundwater yield values described above can conservatively be reported to be the smallest values that have been publicly represented by any of the parties to the ongoing Antelope Valley adjudication. Thus, while this Initial Study cannot report what the court might determine with regard to sustainable groundwater yield, it is unlikely that the court would determine the total sustainable yield to be any smaller than about 110,000 AFY, and not determine the native sustainable yield to be any smaller than about 82,300 AFY. Total sustainable yield could be allocated first to attribute a portion to the importers who are responsible for the importation of supplemental water that results in the associated increase in total groundwater yield; the remainder of total sustainable yield, or "native" yield, will then most logically be allocated in such a way that, in aggregate based on an average unitized pumping allocation, total pumping will not exceed sustainable yield. Pumpers, including agricultural, mutual, and M&I would likely be allocated the majority of the remaining groundwater on an equitable basis, followed by some provision for the dormant overlayers. Under this approach, even in a worst case scenario (e.g., court-ordered reduction of pumping by 40 percent), the groundwater likely made available to this project will exceed the demands of the project and fall below the safe yield of the basin. Looking at the matter in a different way and for illustration purposes only, if the matter were to proceed by direct apportionment without regard to any priority, at the size of the Antelope Valley adjudication area – 1,390 square miles or about 890,000 acres – native sustainable yield equates to nearly 0.1 AFY, and the total sustainable yield without regard to attribution for importation of supplemental water, the unitized total sustainable yield would be about 0.125 AFY. While this latter view is not likely to be enacted, it does demonstrate that because of the substantial reduction in pumping, the remaining ground water use will be below the safe yield under any logical theory of distribution, and therefore is not a significant impact.

Groundwater Quality

According to DWR, the chemical character of groundwater varies in the South Lahontan Hydrologic Region. The water is often calcium type or sodium bicarbonate type; however, near and beneath dry lakes in the region, sodium chloride type and sodium sulfate-chloride type water is common. In general, groundwater beneath the edges of the valleys contains lower total dissolved solids (TDS) content than water beneath the central portions of the valleys or beneath the dry lakes. Drinking water standards in the basin are most often exceeded for TDS, fluoride, nitrates, and/or boron concentrations. TDS concentrations in the AV Basin average 300 milligrams per liter (mg/L) and generally range between 200 and 800 mg/L (DWR, 2004). Water quality in public supply wells is summarized in Table WATER-2.

Three military installations in the Antelope Valley and Mojave River Valley exhibit groundwater contamination from volatile organic compounds (VOCs) and other hazardous contaminants related to site uses (DWR, 2004). These installations are located in the eastern portion of the basin and are hydraulically downgradient from the Project site; therefore, there is no expectation that groundwater wells in the Project area have been impacted by these contaminants.

TABLE WATER-2
Water Quality in Public Supply Wells, Antelope Valley Basin

Constituent Group	Number of Wells Sampled	Number of Wells with a Concentration Greater than an MCL
Inorganics – Primary	214	25
Radiological	183	6
Nitrates	243	8
Pesticides	207	2
VOCs and SVOCs	207	4
Inorganics – Secondary	214	39

Notes:
MCL = maximum contaminant level
SVOC = semivolatile organic compound
VOC = volatile organic compound
Source: DWR, 2004

Surface Water

Surface water in the AV Basin drains via intermittent stream channels to Rosamond Lake, a dry lake bed approximately 21 miles east of the Project site. No permanent water bodies are located on the Project site. Per FEMA Map No. 06037C0100F (Effective Date - September 26, 2008), the southwestern portion of the Project site is currently impacted by a Zone “A” floodplain. Zone “A” is identified by FEMA as the 1 percent Annual Chance (100-year) Storm Frequency (base flood elevation equals the water surface elevation of the 100-year storm). The remainder of the Project site is either (1) Within the 0.2 percent Annual Chance Flood Hazard Zone or (2) Outside of any identified floodplain (Zone “X”) (Bonadiman, 2010). See Figure FLOOD-1. A construction phase SWPPP will include management controls and BMPs to minimize erosion and impacts from sheet flow.

Precipitation

The Project site is located in the Mojave Basin, which is classified as a dry-hot desert climate (BWh), although some portions of the basin are classified as dry-very hot desert (BWhh). Most desert moisture arrives from infrequent warm, moist, and unstable air masses from the south. Average precipitation in the South Lahontan Hydrologic Region is 1.3 million AFY (DWR, 2004). The AV Basin averages between 3 and 7 inches of rain per year, with 16 to 30 days of the year experiencing at least 0.1 inch of precipitation. At least 3 months of the year have average maximum temperatures in excess of 100.4°F.

Impact Discussion

Impacts related to water resources have been analyzed using significance criteria derived from the County of Los Angeles Initial Study Checklist and the CEQA Appendix G checklist. Taking into consideration the significance criteria of both checklists (which are nearly identical), the Project could have a potentially significant effect if one or more of the following were to occur:

a. Is the project site located in an area having known water quality problems and proposing the use of individual water wells?

Based on onsite pump test data (Appendix E) as well as historical data and groundwater studies and analysis of the proposed AV Solar Ranch One project groundwater data, the Project is not in an area having known water quality problems, nor is Project groundwater extraction expected to have a significant impact on the AV Basin or on the groundwater supply in the area (AVSREIR, 2010). Historical water use is estimated to be 2,137 AFY; proposed construction water would use up to 300 AF and operation water up to 2 AF. Existing onsite water wells may be used for PV module washing and other operation water. Domestic water supply during construction would be supplied by bottled water. Domestic water during operations would be supplied by treated well water. Any new wells drilled for domestic purposes would be developed as per LACDPH Standards. Based on the well data and pump test results, potential impacts related to water quality associated with Project use of groundwater at the site are not expected, and impacts would be less than significant. Refer to the Utility Services section for more information regarding groundwater resources.

b. Will the proposed project require the use of a private sewage disposal system? If the answer is yes, is the project site located in an area having known septic tank limitations due to high groundwater or other geotechnical limitations or is the project proposing on-site systems located in close proximity to a drainage course?

The Project would require the use of a private sewage disposal system. Portable toilets would be used for construction wastewater and routinely serviced by a licensed contractor. A private sewage disposal system would be used for operation wastewater. The Project would require one to two permanent staff with regular site visits for security, maintenance, and system monitoring. As noted in the September 30, 2010 letter from County of Los Angeles Public Health, the septic system would be permitted through the Department of Public Health, Land Use Division, prior to starting construction (see Appendix M).

The Project site, however, is not located in an area having known septic tank limitations due to high groundwater or other geotechnical limitations. Groundwater is at least 150 feet below the surface of the Project site, and soil onsite does not exhibit qualities indicating that a leach field septic system would be infeasible. The septic system would not be located near a drainage course; rather, the septic system would be located at the southeastern corner of the Project site's Western Parcel near the O&M Building. Impacts would be less than significant.

c. Could the project's associated construction activities significantly impact the quality of groundwater and/or storm water runoff to the storm water conveyance system and/or receiving water bodies?

The primary concern with impacts to groundwater and stormwater runoff related to construction activities is hazardous material infiltration, sedimentation, and soil erosion. Hazardous materials, such as solvents associated with mechanized equipment, would be stored and used in accordance with manufacturer's specifications and applicable hazardous material regulations, reducing potential impacts to groundwater to less than significant levels.

The Project would require site grading and preparation to place the PV modules. The proposed PV modules are the only Project components that would be placed within areas mapped FEMA Zone A, or areas most likely to be affected by surface water. These structures are placed on steel piers or piles driven into the prepared soil sub-base and elevated above the 100-year floodplain. Water can flow unimpeded beneath the PV modules and therefore would not impact flows across the Project site.

An SWPPP incorporating BMPs for erosion control would be prepared and approved before the start of construction. During site preparation, the SWPPP would be implemented, and initial erosion and sedimentation controls would be installed. This plan would be in accordance with the SWRQCB's regulations for construction, including Land Development Guidelines 1 through 16 of Chapter 4.8 of the Water Quality Control Plan for the Lahontan Region (see Appendix M for comment letter from the California Regional Water Quality Control Board – Lahontan Region). The Project will also comply with applicable post-construction water quality standards adopted by the RWQCB or the SWRCB. These plans would detail the mitigation measures that would be used at the site, such as the construction of local soil berms and a detention area to contain stormwater runoff, the establishment of temporary erosion control measures (such as the installation of silt fences and fiber rolls) to minimize erosion in active grading areas, and the use of water for dust control.

In addition, the depth of groundwater is expected to be at least 150 feet below grade (GeoSoils, 2008). Because of the depth to groundwater, the short-term and temporary nature of construction, and the implementation of SWPPP BMPs as described above (which would minimize the potential for construction-related discharges and associated impacts), it is not expected that construction of the facility would have a significant impact on groundwater quality.

d. Could the project's post-development activities potentially degrade the quality of storm water runoff and/or could post-development non-storm water discharges contribute potential pollutants to the storm water conveyance system and/or receiving bodies?

The generating facility would occupy approximately 580 acres of the 800-acre site. No significant wastewater would be generated from operation of the PV modules. The PV module washwater would be demineralized water and would contain only dust washed off the panels. This washwater would be allowed to soak into the ground and evaporate as it drips off the PV modules. Operation of the Project would, therefore, not degrade the quality of stormwater runoff or contribute potential pollutants from non-stormwater discharges. Impacts would be less than significant.

e.1. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

The Project would use groundwater to meet the estimated water requirements of about 2 AFY on an ongoing basis for domestic and maintenance purposes. This is substantially less than the 2,137 AFY used onsite for recent farming activity. On a unitized basis across the 800-acre site, this equates to about 0.003 AFY. Compared to typical land uses, where unit water requirements for both agricultural and

municipal land uses are within an overall range of about 3 to nearly 7 AFY (Luhdorff & Scalmanini, 2010), the water requirements are exceptionally small. In addition, these water requirements are substantially less than the 0.1 to 0.125 AFY of available water if sustained yield is allocated as discussed above under Water Availability.

The Project also would use groundwater to meet the estimated water requirements of about 300 AFY during construction (a period of about 36 months). On a unitized basis across the 800-acre site, this equates to about 0.375 AFY. Again, this is exceptionally small compared to typical agricultural and municipal land uses, much less than the 2,137 AFY recently used onsite, and would be temporary.

The Project is a notable exception to traditional land uses in the Antelope Valley in that it represents a locally large area, but with associated water requirements which fall well below a conservative allocation of groundwater yield. Consequently, its water use can be considered to be, without special provisions, consistent with sustainable use of groundwater at the scale of the entire Antelope Valley.

e.2. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

As described above, the Project would require site grading and preparation to place the PV modules. These structures are placed on steel piers or piles driven into the prepared soil sub-base and elevated above the 100-year floodplain. Water can flow unimpeded beneath the PV modules and therefore would not impact flows across the Project site. Soil would be preserved onsite through vegetation, natural soil amendments, and/or gravel. No changes to the large drainage channel would occur from the Project because the Project includes a 100-foot setback from the side of the drainage channel. Therefore, impacts would be less than significant.

e.3. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Preliminary engineering plans are designed to convey runoff to mirror existing flow patterns. Current flows drain to the northeast to the large onsite drainage channel; there are no existing or planned stormwater drainage systems in the vicinity of the Project site. Review and approval of the final site engineering plans by the Department of Public Works would ensure that drainage flows do not contribute polluted runoff. Impacts would be less than significant.

Mitigation and Residual Impact

Potential impacts related to water quality would be mitigated to an insignificant level: (1) through compliance with applicable codes, standards, and ordinances; (2) by preparing and implementing a final geotechnical report containing site-specific recommendations for the Project; and (3) by implementing the following mitigation measures:

GEOTECH-1, GEOTECH-2 and FLOOD-1

Based on implementation of the above mitigation measures, the potential impacts associated with water quality would be reduced to a less than significant level.

Cumulative Impact

A list of cumulative projects considered is presented in Appendix A and shown on Figure CUMULATIVE-1. Water pollutants that could be released from development associated with the Project and other potential cumulative projects could include runoff laden with sediment, vehicle and equipment fluids, household chemicals, trash, landscaping byproducts, and other typical urban stormwater pollutants. NPDES was established to regulate stormwater pollution, and all new development including the Project would be

required to comply with the conditions of applicable NPDES permits. Additionally, such development would be required to be in compliance with the LRWQCB Basin Plan (LRWQCB, 1995). The Basin Plan is a regional plan designed to reduce the pollutant levels of receiving waters, and thus is intended to achieve a cumulative reduction in water pollutants. Compliance with the plan would ensure that future development in the Project area would not substantially contribute to cumulative water quality impacts. Therefore, the Project, in conjunction with other approved and proposed projects, would not be expected to result in significant cumulative impacts on surface water quality. Future development in the Project area, such as the Fairmont Butte Motorsports Park (see cumulative projects list in Appendix A and Figure CUMULATIVE-1), would likely increase impermeable surfaces and, as a result, increase the volume of stormwater runoff that may be directed to applicable storm drain systems and/or offsite drainages. However, the Project is designed to balance pre- and post-construction runoff volumes and any increases resulting from the Project would be insignificant. Additionally, through implementation of the above BMPs and Project design/applicant-committed measures, the cumulative impact that will result from the combination of the Project's incremental impact and the effects of other projects is not significant.

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be adversely impacted by, **water quality** problems?

☐ Potentially significant ☒ Less than significant with project mitigation ☐ Less than significant/ No impact

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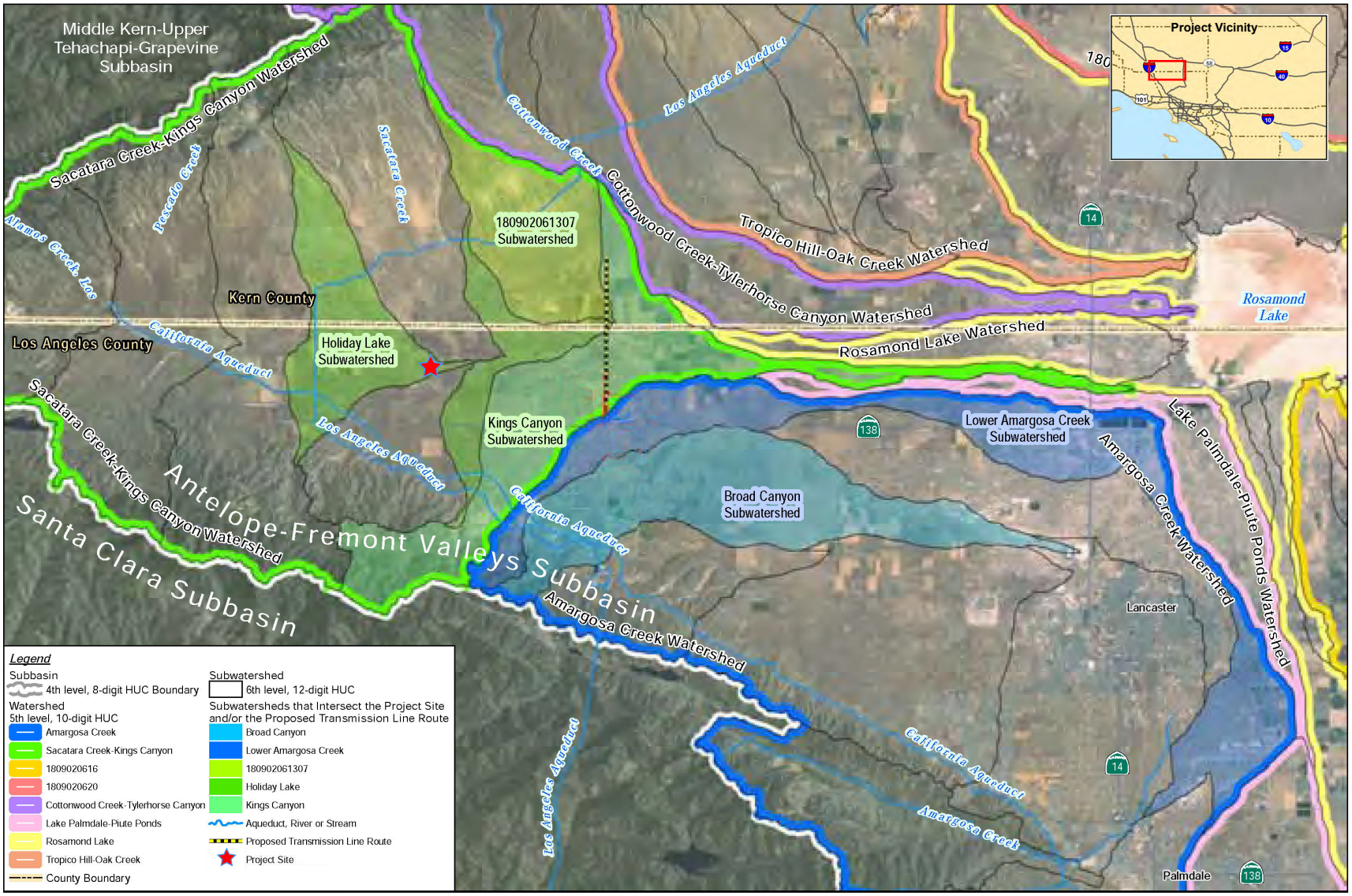

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Source: [1] USDA/NRCS - National Cartography and Geospatial Center: 12-Digit Watershed Boundary Dataset (WBD) 1:24,000 (1999), [2] I-cubed Nationwide Prime - Aerials Express (2007-02-15 image date, 0.3m resolution), [3] 1m Natural Color NAIP (2005).

Figure WATER-1
Groundwater Basin
Alpine Solar Project
July 2010

Source: San Diego State University, compiled from Geology of California at 750,000 Scale, California Geological Survey.

ES060110104223SCO400647.AR.03.01 NRG_Alpine_basin.ai 7/10

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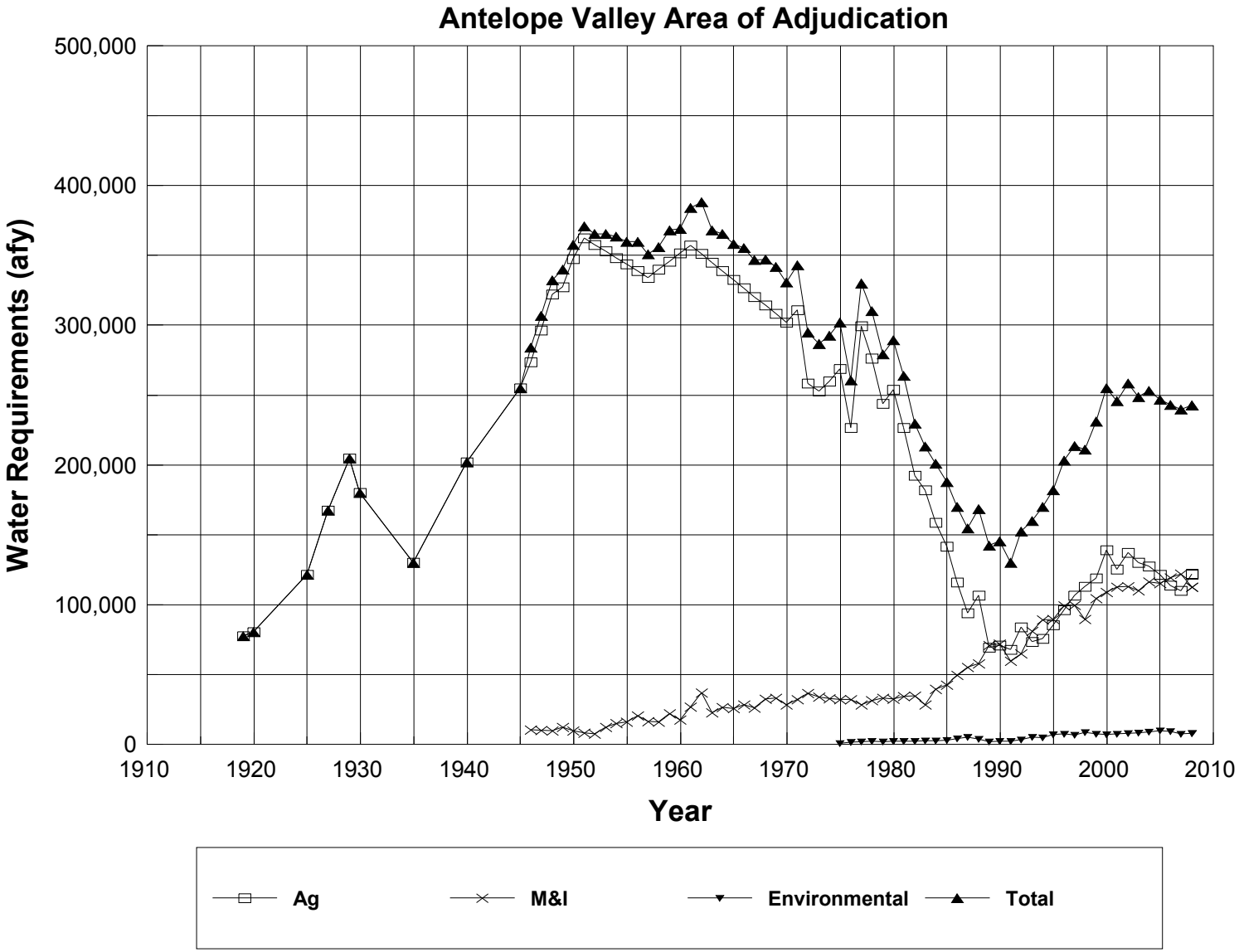

Figure WATER-2
Estimated Historical Total Water Requirements
Alpine Solar Project
November 2010

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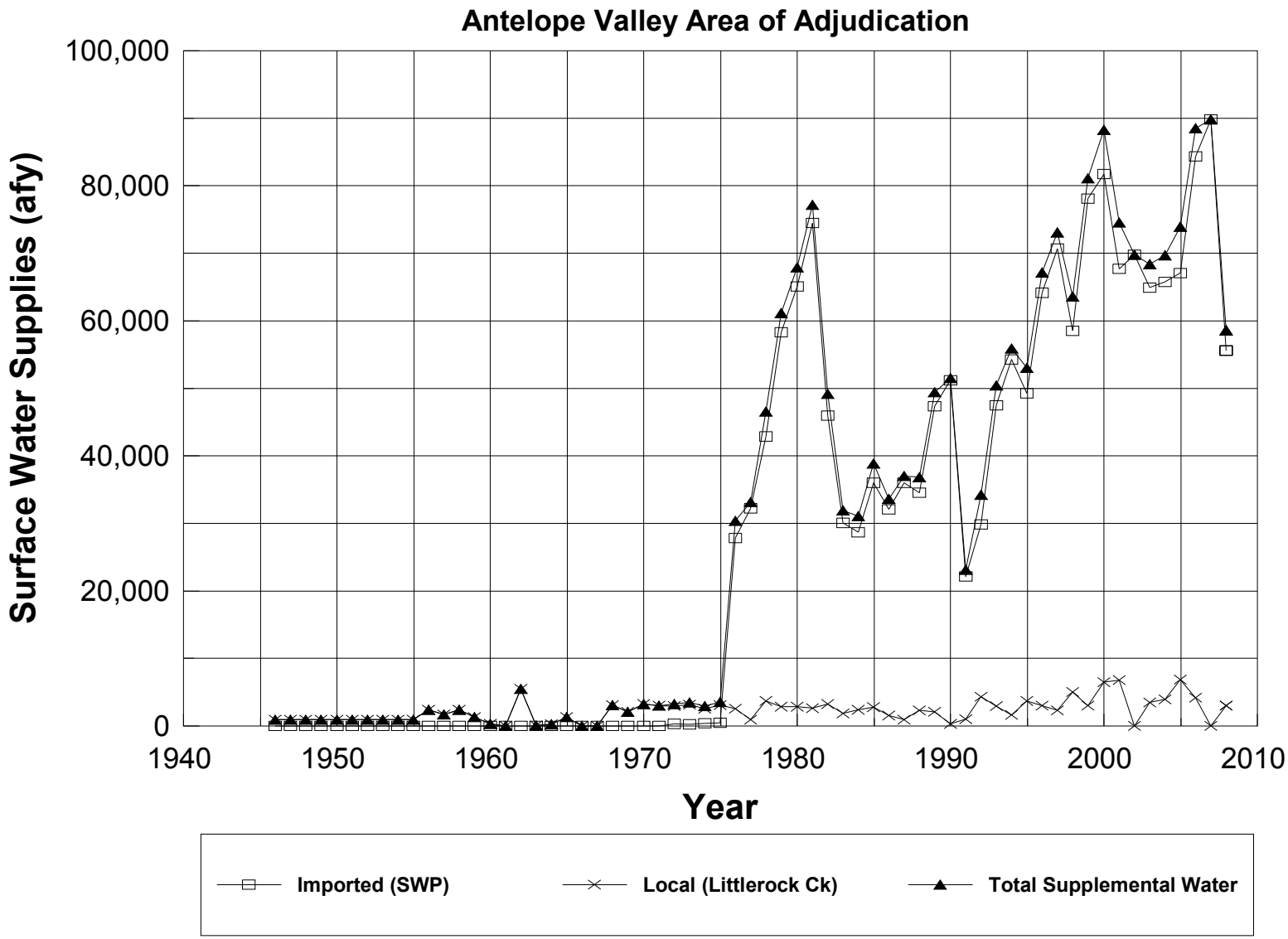

Figure WATER-3
Historical Supplemental Surface Water by Source
Alpine Solar Project
November 2010

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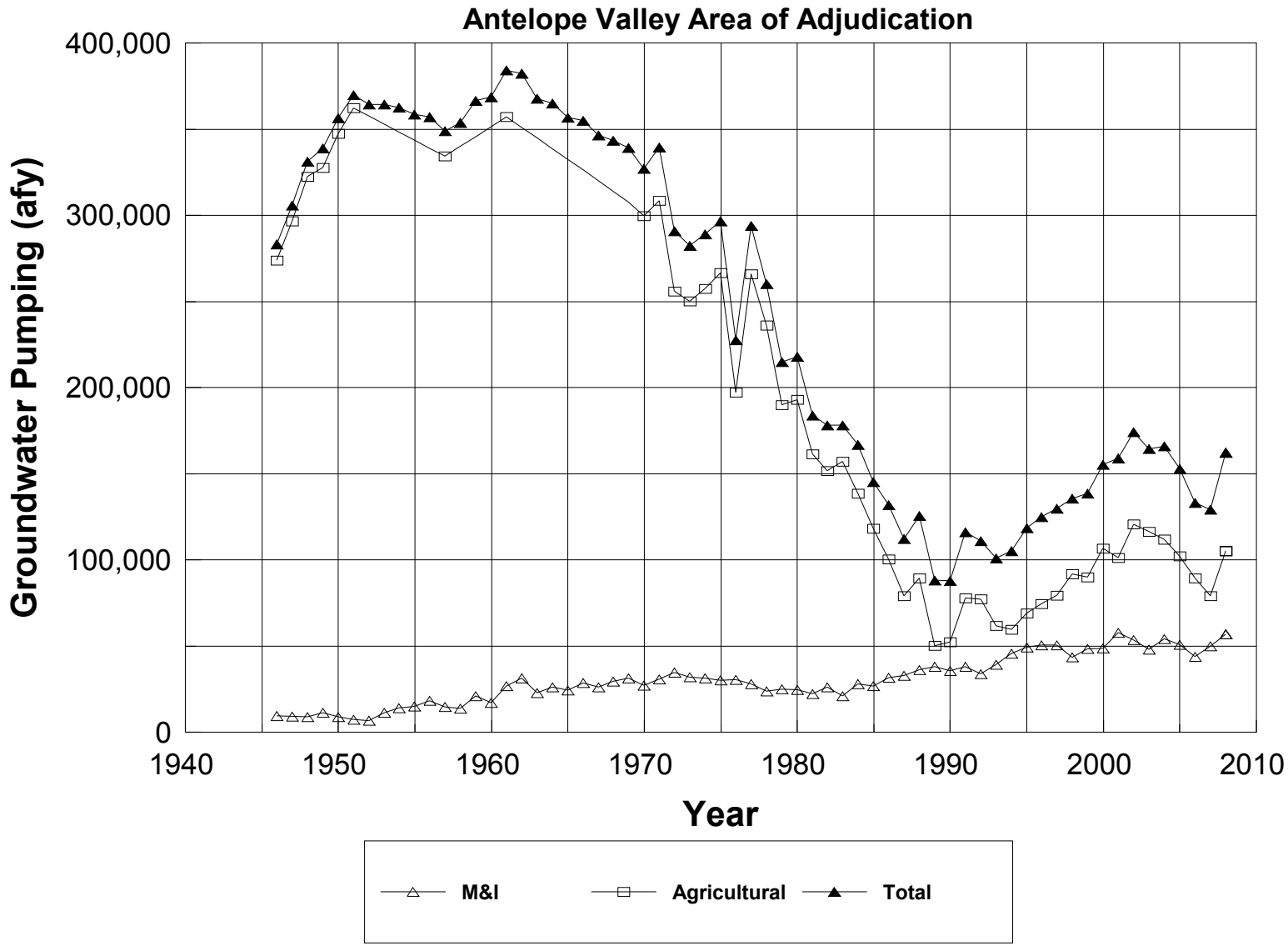

Figure WATER-4
Estimated Historical Groundwater Pumping
Alpine Solar Project
November 2010

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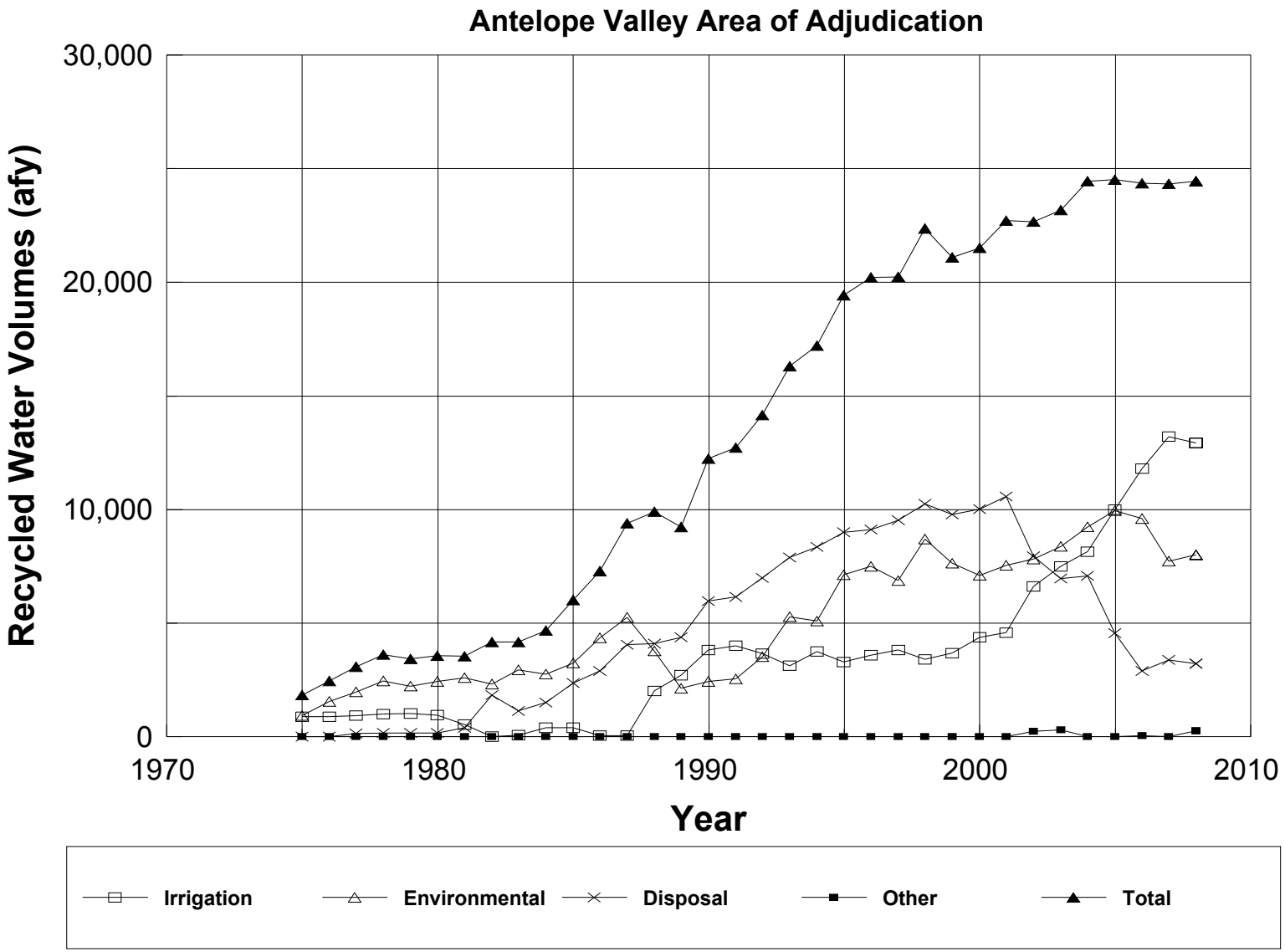

Figure WATER-5
Recycled Water Supply
Alpine Solar Project
November 2010

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RESOURCES - 2. AIR QUALITY

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Will the proposed project exceed the State's criteria for regional significance (generally (a) 500 dwelling units for residential users or (b) 40 gross acres, 650,000 square feet of floor area or 1,000 employees for non-residential uses)?
b.	☐	☒	☐	Is the proposal considered a sensitive use (schools, hospitals, parks) and located near a freeway or heavy industrial use?
c.	☐	☒	☐	Will the project increase local emissions to a significant extent due to increased traffic congestion or use of a parking structure or exceed AQMD thresholds of potential significance? (CEQA Checklist, III. Air Quality.
d.	☐	☒	☐	Will the project generate or is the site in close proximity to sources that create obnoxious odors, dust, and/or hazardous emissions? (CEQA Checklist, III. Air Quality. e.)
e.	☐	☒	☐	Would the project conflict with or obstruct implementation of the applicable air quality plan? (CEQA Checklist, III. Air Quality. a.)
f.	☐	☒	☐	Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation? (CEQA Checklist, III. Air Quality. b.)
g.	☐	☒	☐	Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under applicable federal or state ambient air quality standard (including releasing emission which exceed quantitative thresholds for ozone precursors)? (CEQA Checklist, III. Air Quality. c.)
h.	☐	☒	☐	Other factors? 1. Expose sensitive receptors to substantial pollutant concentrations? (CEQA Checklist, III. Air Quality. d.)

STANDARD CODE REQUIREMENTS

☐ Health and Safety Code – Section 40506

☐ **MITIGATION MEASURES**

☐ Project Design ☐ Air Quality Report

☐ **OTHER CONSIDERATIONS**

Regulatory Setting

This section provides an overview of federal, state, and local regulations related to air quality issues applicable to the Project.

Federal

Clean Air Act Amendments of 1970

The EPA has issued the National Ambient Air Quality Standards (NAAQS). Pollutants regulated under these standards include ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and sulfur dioxide (SO_2). The Antelope Valley Air Quality Management District (AVAQMD) and California Air Resources Board (CARB) are the responsible agencies for developing plans to achieve attainment with the NAAQS in the Project region.

State

The CARB was created in 1968 by the Mulford-Carrell Air Resources Act, through the merger of two other state agencies. CARB's primary responsibilities are to develop, adopt, implement, and enforce the state's motor vehicle pollution control program; to administer and coordinate the state's air pollution research program; to adopt and update, as necessary, the California Ambient Air Quality Standards (CAAQS); to review the operations of the local air pollution control districts (APCDs); and to review and coordinate preparation of the State Implementation Plan (SIP) for achievement of the NAAQS. CARB has accordance with the requirements of the federal Clean Air Act and California Health and Safety Code (H&SC):

- SIP
- California Clean Air Act
- Toxic Air Contaminant Program
- Airborne Toxic Control Measure for Stationary Compression-Ignition Engines
- Nuisance Regulation
- Air Toxics "Hot Spots" Act

CARB oversees local districts implementation of plans related to CAAQS: NO_2, CO, PM_{10}, $PM_{2.5}$, SO_2, lead, sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles.

Local

The Project site is located in the AVAQMD. The AVAQMD is responsible for planning, implementing attainment strategies, and enforcing federal and state ambient standards within their jurisdiction. The regulations of this agency is focused on stationary sources and, therefore, are generally not relevant to this Project because the Project has limited stationary sources. On- and off-road mobile sources are regulated by EPA and CARB fuel and engine standards.

Antelope Valley Air Quality Management District

The Project is situated in the AVAQMD. The construction and operation of the facility would be subject to the prohibitory rules governing dust generation. In addition, some equipment (construction and operations) would require operating permits from the AVAQMD. The applicable rules for this Project would be:

- AVAQMD Rule 201 – Permit to Construct

Any person building, altering, or replacing any equipment, the use of which may cause the issuance of air contaminants or the use of which may eliminate or reduce or control the issuance of air contaminants, must first obtain authorization for such construction from the AVAQMD. A Permit to Construct (PTC) shall remain in effect until the Permit to Operate (PTO) for the equipment for which the application was

filed is granted, denied, or cancelled. The PTC application is evaluated based on the requirements of Regulations XIII, as identified in Rule 1303, to assess if best available control technology, offsets, and/or modeling is required.

- AVAQMD Rule 203 – Permit to Operate

A person shall not operate or use any equipment, the use of which may cause the issuance of air contaminants, or the use of which may reduce or control the issuance of air contaminants, without first obtaining a written PTO from AVAQMD, or except as provided in Rule 202. The equipment shall not be operated contrary to the conditions specified in the PTO. The Project would comply with this rule by obtaining a permit from the AVAQMD in a timely manner and complying with the stated conditions.

- AVAQMD Rule 401 – Visible Emissions

A person shall not discharge into the atmosphere, from any single source of emissions whatsoever, any air contaminant for a period or periods aggregating more than three minutes in any one hour which is as dark or darker in shade as that designated as No. 1 on the Ringelmann Chart, or of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke which is as dark or darker in shade as that designated as No. 1 on the Ringelmann Chart. The Project emission sources will be equipped with Best Available Control Technology (BACT) and combust clean fuels and, consequently, compliance with this rule is expected.

- AVAQMD Rule 402 – Nuisance

A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety of any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property. Due to the application of BACT on each emission source and the distance from the emission sources to any potential receptors, compliance with this rule is expected.

- AVAQMD Rule 403 – Fugitive Dust

The purpose of this rule is to reduce the amount of PM_{10} emitted from significant manmade fugitive dust sources and in an amount sufficient to maintain the NAAQS. The provisions of this rule apply to specified bulk storage, earthmoving, construction and demolition, and manmade conditions resulting in wind erosion.

- AVAQMD Rule 404 – Particulate Matter – Concentration

Rule 404 applies to any person who discharges PM emissions into the atmosphere from any single-source operation. The rule limits PM emissions based upon the exhaust flow rate. The fire water pump/ emergency generator engines would be subject to and will comply with this rule by using only ultra-low sulfur diesel fuel.

- AVAQMD Rule 405 – Particulate Matter – Emission Rate

A person shall not discharge into the atmosphere from any source operation, particulate matter in excess of the limits shown in the rule. This rule is generally applied to processes that handle bulk dry materials, and is not generally applied to combustion processes, as there is not "process weight" on which to base the emissions limit.

- AVAQMD Rule 442 – Usage of Solvents

The rule is a general prohibitory rule that would govern proper usage of solvents and paints. Other source-specific rules governing cleaning, painting, and stripping may apply if the construction or operational-phase activities include these actions.

The AVAQMD prepared a list of measures to reduce PM_{10} emissions in 2005 (AVAQMD, 2005) in response to a legislative mandate. Within the published list, the only applicable measures for this Project are fugitive dust control measures, which would be integrated into a fugitive dust control plan for construction and operation.

Environmental Setting

The Project is located in the Mojave Desert Air Basin (MDAB) under the jurisdiction of the AVAQMD. The MDAB covers more than 20,000 square miles and encompasses the majority of California's high desert with typical hot, dry summers and cold winters with little precipitation. It is bounded by the San Gabriel and San Bernardino mountains to the south, which serve as a boundary separating the MDAB from the South Coast Air Basin (SCAB). The Tehachapi Mountains constitute the northwestern boundary separating the MDAB from the San Joaquin Air Basin (SJAB). Because it is a desert environment consisting of flat terrain, high wind conditions can cause the generation of a substantial amount of fugitive dust (i.e., particulate matter). Air quality in the MDAB is also heavily influenced by airborne pollutants transported into the region from the much more heavily populated and industrial areas within the SCAB under the jurisdiction of the South Coast Air Quality Management District.

Criteria Pollutants

The EPA, CARB, and the local air districts classify an area as attainment, unclassified, or non-attainment, depending on whether or not the monitored ambient air quality data related to criteria pollutants show compliance, insufficient data available, or non-compliance with the ambient air quality standards, respectively. Criteria pollutants are described below.

Ozone. O_3 is a colorless gas that has a pungent odor and causes eye and lung irritation, reduces visibility, and damages crops. O_3 is a primary constituent of smog and is formed in the atmosphere in the presence of sunlight by a series of chemical reactions involving nitrogen oxides (NO_X) and reactive organic gases (ROG). Industrial fuel combustion and motor vehicles are the primary sources of NO_X and ROG.

Particulate Matter. PM is generally composed of airborne particles, such as dust, soot, aerosols, fumes, and mists. Respirable PM (i.e., PM_{10}) is a primary concern; a subgroup of these particulates is fine particulates (i.e., particles with aerodynamic diameter less than 2.5 microns, or $PM_{2.5}$), which typically have very different characteristics and potential health effects from those of coarse particulates (particles with aerodynamic diameter between 2.5 to 10 microns). Coarse particulates are generated by sources such as windblown dust, agricultural fields, and dust from vehicular traffic on unpaved roads. $PM_{2.5}$ is typically emitted from fuel combustion activities such as operation of industrial and manufacturing process equipment, vehicle exhaust, and residential wood-burning stoves and fireplaces. $PM_{2.5}$ is also formed in the atmosphere when gases such as SO_2, NO_X, and VOC emitted by combustion activities are transformed into particles by chemical reactions in the air.

Carbon Monoxide. CO is an odorless, colorless gas that can impair the transport of oxygen in the bloodstream, aggravate cardiovascular disease and cause fatigue, headache, confusion, and dizziness. CO forms through incomplete combustion of fuels in vehicles, wood stoves, industrial operations, and fireplaces. Vehicular exhaust is a major source of CO. CO tends to dissipate rapidly into the atmosphere and consequently is generally a concern at the local level, particularly near major road intersections.

Nitrogen Dioxide. NO_2 is a brownish, highly reactive gas that can irritate the lungs, cause pneumonia, and lower the resistance to respiratory infections. NO_X, which includes NO_2, is a key precursor to O_3 and acid rain. NO_X forms when fuel is burned at high temperatures, primarily in vehicles and stationary fuel combustion sources such as electric utility and industrial boilers.

Sulfur Dioxide. SO_2 is a colorless acidic gas with a strong odor. High concentrations of SO_2 affect breathing and may aggravate existing respiratory and cardiovascular disease. SO_2 is also a primary contributor to acid deposition, which causes acidification of lakes and streams and can damage trees, crops, building materials, and statues. In addition, sulfur compounds in the air can contribute to visibility impairment. The major source category for SO_2 is fossil-fuel-burning equipment.

In the AVAQMD, ozone is designated as non-attainment at the state and federal level, and PM_{10} is also in non-attainment under state standards. All other emissions are in attainment or unclassifiable.

Other Pollutants of Concern

Toxic Air Contaminants. Toxic Air Contaminants (TACs) have the potential to cause health effects such as increased risk of contracting cancer. TACs are considered separately from the criteria pollutants in the regulatory process. CAAQSs have not been set for TACs because ambient TAC concentrations vary from area to area and are dependent on the type of emission sources within the region. Therefore, TACs are typically regulated on a source-by-source basis (e.g., type and amount of TACs emitted, proximity to nearest sensitive receptors [hospitals, school, daycare, residences]).

Asbestos. Asbestos is a naturally occurring mineral typically found in ultramafic (i.e., silica poor) rocks that include serpentine. Airborne asbestos fibers may enter the lungs and can cause scarring of lung tissue, leading to asbestosis, and possibly lung or other cancers (e.g., mesothelioma). The California Department of Conservation, Division of Mines and Geology has mapped areas in the state with high probability of containing ultramafic rock; there is no known ultramafic rock in the vicinity of the Project site.

Valley Fever. Valley Fever or coccidioidomycosis is caused by the microscopic fungus coccidioides immitis (C. immitis), which grows in arid soil in parts of Los Angeles County, and in other regions in California and around the country. Infection occurs when the spores of the fungus are inhaled. The fungal spores become airborne when contaminated soil is disturbed by construction and agricultural activities, and natural phenomena, such as wind storms, dust storms, and earthquakes. About 60 percent of infected persons have no symptoms. The remainder develop flu-like symptoms that can last for a month and tiredness that can sometimes last for longer than a few weeks. A small percentage of infected persons (<1 percent) can develop disseminated disease that spreads outside the lungs to the brain, bone, and skin. Without proper treatment, Valley Fever can lead to severe pneumonia, meningitis, and even death (http://www.dhpe.org/infect/valley.html).

Air Pollution Sources

The frequent presence of a thermal low pressure area above the Mojave Desert promotes atmospheric transport from the Los Angeles Basin. The most significant large-scale phenomena affecting air quality in the Project area are the transport winds from the northwest and southwest. These winds are responsible for bringing ozone and other pollutants through the mountain passes from the Los Angeles Basin (Cajon and Soledad Passes) and the San Joaquin Valley (Tehachapi Pass). Pollutant transport into the MDAB is the primary reason for the periods of federal and California ozone standard violations (AVSREIR, 2010).

Mobile sources contribute the majority of AVAQMD emissions totals of ROG, NO_X and CO. Mineral processes, unpaved roads, and construction/demolition activities contribute the largest fraction to the PM_{10} and $PM_{2.5}$ emissions. There are currently no large-point emission sources in the vicinity of the Project site (AVSREIR, 2010).

Impact Discussion

Impacts related to air quality have been analyzed using significance criteria derived from the County of Los Angeles Initial Study Checklist and the CEQA Appendix G checklist. Taking into consideration the significance criteria of both checklists (which are nearly identical), the Project could have a potentially significant effect if one or more of the following were to occur:

a. Will the proposed project exceed the State's criteria for regional significance (generally (a) 500 dwelling units for residential users or (b) 40 gross acres, 650,000 square feet of floor area or 1,000 employees for non-residential uses)?

The Project site is 800 acres and therefore will exceed the 40 gross acre criteria.

b. Is the proposal considered a sensitive use (schools, hospitals, parks) and located near freeways or heavy industrial use?

The Project would result in a 92-MW solar PV generating facility, which is not a sensitive use. Sensitive receptors are defined as populations that are more susceptible to the effects of pollution than the population at large. Sensitive receptors include long-term health care facilities, convalescent centers, hospitals, residences, playgrounds, rehabilitation centers, retirement homes, schools, child care centers, and athletic facilities. The nearest sensitive receptor is a residence located at the intersection of 192nd Street and West Avenue C, which is approximately 4,000 feet from the Project site. The Project is not near a freeway or heavy industrial use areas. The area around the Project site is predominantly open space, agriculture and scattered low-density residential uses. At this distance, operation of the Project would not expose the sensitive receptor to substantial pollutant concentrations, and the impact would be less than significant.

c. Will the project increase local emissions to a significant extent due to increased traffic congestion or use of a parking structure or exceed AQMD thresholds of potential significance?

The Project will not significantly increase traffic volumes during construction or operation of the facility. Construction will require about 240 workers during the peak period. As described in the Traffic section of this document, roadways in the vicinity of the Project are operating at acceptable levels and the addition of construction-related traffic would not cause any Level of Service (LOS) threshold, both for Los Angeles County and Caltrans, to be exceeded. Operation of the facility will only require one to two staff onsite resulting in a negligible increase in vehicles on roadways in the Project vicinity.

Local CO Hot Spots. The primary mobile source pollutant of local concern is CO, which is a direct function of vehicle idling time caused by traffic flow conditions. While CO transport is limited, it does disperse from the source under normal meteorological conditions. Under certain extreme meteorological conditions, CO concentrations near a congested roadway or intersection may reach unhealthy levels affecting local sensitive receptors (e.g., residents, school children, the elderly, and hospital patients). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable LOS or with extremely high traffic volumes. Areas of vehicle congestion create pockets of high CO concentration called "hot spots."

The Project would generate a very low number of vehicle trips and is surrounded by roads that receive very little traffic. It is extremely unlikely that congestion at an intersection near the Project would create emissions that would exceed the standards for CO. Therefore, implementation of the Project would not result in substantial adverse air quality impacts associated with CO hot spots.

The Project does not include construction of a parking structure.

The Project site is located in the MDAB and is within the jurisdiction of the AVAQMD. The primary pollutants of concern within the MDAB are O_3 and PM_{10}, because concentrations of these pollutants have

been found to exceed ambient air quality standards. The Project is located in an area that is designated as nonattainment, or not in compliance with the air quality standards, for the federal 8-hour O_3 standard, the state 1-hour O_3 standard, the state 8-hour O_3 standard, and the state PM_{10} standards.

Pollutant monitoring results for the years 2007 to 2009 at the MDAB ambient air quality monitoring station (43301 Division Street, Lancaster, CA) indicate that air quality in the Project area has been in compliance with the federal and state ambient air quality standards, except for O_3 concentrations (CARB Website: http://www.arb.ca.gov/aqd/aqdpage.htm). From 2007 to 2009, the measured 1-hour O_3 concentrations exceeded the state standard multiple times. In addition, the measured 8-hour O_3 concentrations also exceeded both the federal and state standards multiple times. PM_{10} concentrations measured at the Lancaster monitoring station did not exceed the federal 24-hour PM_{10} standard, with the exception of one exceedance in 2007. Measured 24-hour PM_{10} concentrations have exceeded the state standard at least once per year between 2007 and 2009. Measured CO and NO_2 concentrations have not exceeded the federal or state standards during the 3-year period reviewed. SO_2 concentrations are not monitored in the MDAB.

Air pollutant emissions associated with the Project would occur over the short term in association with construction activities such as grading and vehicle/equipment use. Long-term emissions would result from vehicle trips to and from the Project site associated with employee trips to work. The discussion below describes potential air quality violations that could occur as a result of construction equipment exhaust emissions, fugitive dust, long-term vehicle emissions, and local CO hot spots.

Construction Equipment Exhaust Emissions. During the Project's construction phase, onsite stationary sources, heavy-duty construction vehicles, construction worker vehicles, and energy use would generate emissions. In addition, fugitive dust would be generated during grading and construction activities. The following significance thresholds for criteria pollutants have been established by the AVAQMD for both construction and operation project phases:

- 137 pounds per day for ROG
- 137 pounds per day of NOx
- 82 pounds per day of PM_{10}
- 82 pounds per day of $PM_{2.5}$
- 548 pounds per day of CO
- 137 pounds per day of SOx

Projects in the AVAQMD with construction-related emissions or operation-related emissions that exceed any of the emission thresholds listed are considered to have significant impacts. The Urban Emissions Model (URBEMIS, 2007) computer program, which is the air quality model recommended by AVAQMD for estimating emissions associated with land use development projects, was used to calculate construction emissions (AVAQMD, 2008). The construction period is characterized by three separate phases. Phase 1 includes site preparation, clearing, and grading activities. Phase 2 involves underground work, system installation, and testing. Phase 3 includes cleanup and restoration of the construction site. Since AVAQMD's thresholds are expressed in pounds per day, a "worst case" scenario was used to analyze whether any portion of construction activities would exceed the thresholds. Table AIR-1 summarizes the Project's "worst-case" estimated emissions for construction. The construction emission's calculation sheet is provided in Appendix F.

TABLE AIR-1
Project Construction Emissions in Pounds per Day

	ROG	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**SO_x**
Regional Emissions	19.87	129.17	8.02	7.14	103.63	0.26
AVAQMD Significance Threshold	137	137	82	82	548	137
Exceed?	No	No	No	No	No	No
Source: URBEMIS, 2010.						

As shown in Table AIR-1, peak construction emissions would not exceed the applicable thresholds for ROG, NO_X, PM_{10}, $PM_{2.5}$, CO, or SO_X. Therefore, impacts related to construction emissions would be less than significant.

Fugitive Dust. Construction dust would affect local air quality at various times during construction of the Project. The dry, windy climate of the area during the summer months creates a high potential for dust generation when and if underlying soils are exposed. Clearing, grading, and earthmoving activities have a high potential to generate dust whenever soil moisture is low and particularly when the wind is blowing.

Emissions of particulate matter or visible emissions are regulated by the AVAQMD. Specifically, visible particulate emissions (i.e., dust) are prohibited whenever they are generated in sufficient quantity to fall on offsite properties and cause annoyance to the owner(s) of such property. Construction activities that would generate fugitive dust emissions on the site would be subject to AVAQMD Rule 403. Project construction activities generating fugitive dust would comply with AVAQMD Rule 403 and would not contribute to exceeding the AVAQMD thresholds. A summary of the fugitive dust emissions are presented in Appendix F. Implementation of proposed mitigation measures would reduce construction-related fugitive dust impacts to a less than significant level.

Long-term Emissions. Long-term air emission impacts would be those associated with changes in permanent usage of the Project site. Mobile source emissions would result from vehicle trips associated with the Project. URBEMIS 2007 was used to calculate long-term mobile source emissions associated with the Project. The emissions from daily vehicle trips associated with the Project are illustrated in Table AIR-2. The operational emission's calculation sheet is provided in Appendix F.

TABLE AIR-2
Project Regional Emissions in Pounds per Day

	ROG	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**SO_x**
Regional Emissions	3.93	3.50	5.31	1.03	24.11	0.03
AVAQMD Significance Threshold	137	137	82	82	548	137
Exceed?	No	No	No	No	No	No
Source: URBEMIS, 2010.						

As shown in Table AIR-2, the long-term emissions generated by the Project are not anticipated to exceed the AVAQMD's thresholds; therefore, the Project would have a less than significant impact on local and regional air quality.

d. Will the project generate or is the site in close proximity to sources that create obnoxious odors, dust, and/or hazardous emissions?

Electricity generation via the use of PV systems does not generate chemical emissions that would produce objectionable odors. Potential odor generation associated with the Project would be limited to construction sources such as diesel exhaust and dust. Construction would require the operation of equipment that may generate dust but as described in c. above, construction activities will not cause any criteria pollutant threshold, including particulate matter, to be exceeded.

In 1998, the CARB identified particulate matter from diesel-fueled engines as a TAC. CARB has completed a risk management process that identified potential cancer risks for a range of activities using diesel-fueled engines (CARB, 2000). High-volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic (e.g., distribution centers and truck stops) were identified as having the highest associated risk.

Health risks from TACs are a function of both concentration and duration of exposure. Unlike the above types of sources, construction diesel emissions are temporary, affecting an area for a period of days or perhaps weeks. Additionally, construction-related sources are mobile and transient in nature, and the emissions occur within the Project site. Because of the short duration for construction and the distance to the nearest sensitive receptor, health risks from construction emissions of diesel particulate matter would be a less than significant impact with proposed mitigation.

The Project site is not in close proximity to any known sources that create obnoxious odors, dust, and/or hazardous emissions. Land adjacent to the Project site is primarily open space, agriculture and scattered residences. There would be no impact.

e. Would the project conflict with or obstruct implementation of the applicable air quality control plan?

The main purpose of an air quality plan is to bring an area into compliance with the federal and state ambient air quality standards. Such plans describe air pollution control strategies to be implemented by a city, county, or region. The latest air quality plan, the *2008 Federal 8-Hour Ozone Attainment Plan (Western Mojave Desert Non-Attainment Area)*, was developed to bring the region into compliance with the federal 8-hour O_3 standard. The Los Angeles County General Plan is consistent with the O_3 attainment plan. The Project would not require amendments to the Los Angeles County General Plan and would not generate new homes or employment opportunities that would change the County's projections. Therefore, the Project would not conflict with or obstruct implementation of the applicable air quality plan.

f. Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

As described in c. above, the Project would not exceed any criteria pollutant threshold for construction and operation. Operation would reduce the need for fossil fuel and therefore reduce air pollutants and greenhouse gas emissions, thereby having an overall beneficial effect.

g. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

The Project would contribute criteria pollutants in the area during the construction period; however, the Project's mitigated emissions would be below AVAQMD thresholds, as previously discussed. The operation of the solar PV facility would generate clean renewable energy without reliance on fossil fuels, thereby having a beneficial effect. Cumulative impacts would be less than significant.

h.1. Expose sensitive receptors to substantial pollutant concentrations?

As described in c., d., and e. above, the Project would not expose sensitive receptors to substantial pollutant concentration. The Project would not exceed established AVAQMD thresholds, and the nearest sensitive receptor is a residence approximately 4,000 feet from the Project sites. Impacts would be less than significant.

Mitigation and Residual Impact

Potential impacts related to air quality would be mitigated to an insignificant level: (1) through compliance with applicable codes, standards, and ordinances; (2) by preparing and implementing a final geotechnical report containing site-specific recommendations for the Project; and (3) by implementing the following mitigation measures:

AIR-1. Consistent with the requirements of AVAQMD Rule 403, the Project applicant will include dust control measures in construction specifications for the Project and prepare a Dust Control Plan. The following measures are required:

- Non-toxic soil binders will be applied per manufacturer recommendations to active unpaved roadways, unpaved staging areas, and unpaved parking area(s) throughout construction to reduce fugitive dust emissions.
- Travel on unpaved roads will be reduced to the extent possible, by limiting the travel of heavy equipment in and out of the unpaved areas.
- The disturbed areas of the active construction sites will be watered at least three times per day (when soil moisture conditions result in dust generation) and more often if visible fugitive dust leaving the site is noted.
- Enclose, cover, water twice daily, and/or apply non-toxic soil binders according to manufacturer's specifications to exposed piles of soils with a 5 percent or greater silt content.
- Maintain unpaved road vehicle travel to the lowest practical speeds, and no greater than 15 mph, to reduce fugitive dust emissions.
- All vehicle tires will be inspected, be free of dirt, and washed as necessary prior to entering paved public roadways from the Project site.
- Install wheel washers or wash the wheels of trucks and other heavy equipment where vehicles exit the site.
- Cover all trucks hauling soil and other loose material, or require at least 2 feet of freeboard.
- Establish a vegetative ground cover (in compliance with biological resources impact mitigation measures) or otherwise create stabilized surfaces on all unpaved areas through application of dust palliatives at each of the construction sites within 21 days after active construction operations have ceased.
- Prepare contingency for high wind periods (greater than 25 mph) to shut down or mitigate activity as necessary to control fugitive dust.
- Travel routes to each construction site area will be developed to minimize unpaved road travel. Travel management will include staging of deliveries to minimize idling or congestion, use of dust palliatives or soil tackifiers on road surfaces, and minimizing travel distance.

AIR-2. The construction contractor will ensure that all mechanical equipment associated with Project construction is properly tuned and maintained in accordance with the manufacturer's specifications.

AIR-3. Engine idle time will be restricted to no more than 5 minutes as required by the CARB engine idling regulation. Exceptions in the regulation include vehicles that need to idle as part of their operation, such as concrete mixer trucks.

AIR-4. Any off-road stationary and portable gasoline-powered equipment brought onsite for construction activities will have EPA Phase 1/Phase 2 compliant engines, where the specific engine requirement will be based on the new engine standard in effect 2 years prior to the commencement of Project construction. In the event that EPA Phase 1/Phase 2 compliant engines are determined not to be available, the Applicant will provide documentation to the AVAQMD.

Cumulative Impact

The Project's incremental effect related to construction emissions is not cumulatively considerable, and the Project's cumulative effect is therefore not significant. The Project provides a cumulative benefit by reducing reliance on fossil fuels and thereby improving air quality.

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be adversely impacted by, **air quality**?

☐ Potentially significant ☒ Less than significant with project mitigation ☐ Less than significant/ No impact

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RESOURCES - 3. BIOTA

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the project site located within Significant Ecological Area (SEA), SEA Buffer, or coastal Sensitive Environmental Resource (ESHA, etc.), or is the site relatively undisturbed and natural?
b.	☐	☒	☐	Will grading, fire clearance, or flood related improvements remove substantial natural habitat areas?
c.	☒	☐	☐	Is a drainage course located on the project site that is depicted on USGS quad sheets by a dashed blue line or that may contain a bed, channel, or bank of any perennial, intermittent or ephemeral river, stream, or lake?
d.	☐	☒	☐	Does the project site contain a major riparian or other sensitive habitat (e.g. coastal sage scrub, oak woodland, sycamore riparian, woodland, wetland, etc.)?
e.	☐	☒	☐	Does the project site contain oak or other unique native trees (specify kinds of trees)?
f.	☒	☐	☐	Is the project site habitat for any known sensitive species (federal or state listed endangered, etc.)?
g.	☐	☐	☒	Other factors (e.g., wildlife corridor, adjacent open space linkage)?

1. 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 California Department of Fish and Game or U.S. Fish and Wildlife Service? (CEQA Checklist, IV. Biological Resources. a.)

2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service? (CEQA Checklist, IV. Biological Resources. b.)

3. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? (CEQA Checklist, IV. Biological Resources. c.)

4. 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? (CEQA Checklist, IV. Biological Resources. d.)

5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? (CEQA Checklist, IV. Biological Resources. e.)

6. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? (CEQA Checklist, IV. Biological Resources. f.)

☒ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design ☐ ERB/SEATAC Review ☐ Oak Tree Permit

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Regulatory Setting

This section provides an overview of state and local regulations related to biological resources issues applicable to the Project.

Federal

Endangered Species Act

Section 9 of the Endangered Species Act (ESA) prohibits the "take" of federally listed Threatened and Endangered species. The ESA defines "take" as any action that would harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect any Threatened or Endangered species. Because no federally listed species are known or suspected to occur on the Project site, applicability of this statute would be contingent on unanticipated discovery of such species.

Migratory Bird Treaty Act

The Project would also be subject to the requirements of the Migratory Bird Treaty Act (MBTA). This regulation protects all migratory birds and their nests and makes it unlawful to "take" (e.g., pursue, kill, harm, harass) any migratory birds, their eggs, or active nests.

Federal Clean Water Act

Perennial and intermittent drainages, creeks, and streams that are tributary to navigable waters are generally subject to jurisdiction of the U.S. Army Corps of Engineers (USACE) under Section 404 of the CWA. This statute requires that any person proposing to discharge dredge or fill material into Waters of the U.S. first obtain a permit from the USACE authorizing such discharge. Based on the assessment of jurisdictional waters and wetlands performed for this Project, no Waters of the U.S. are present on the Project site and Section 404 of the CWA would not be applicable to the Project.

State

California Endangered Species Act

Section 2080 of the California Endangered Species Act (CESA) prohibits the "take" of state-listed Threatened and Endangered species. As defined in Section 86 of the California Fish and Game Code, "take" means to hunt, pursue, catch, capture, or kill, or to attempt any of these activities. If a proposed project may result in "take" of a listed species, an Incidental Take Permit pursuant to Section 2081 of CESA is required from the California Department of Fish and Game (CDFG).

California Fish and Game Code (Sections 3503 and 3513)
The Project would also be subject to the requirements of Sections 3503 and 3513 of the California Fish and Game Code. These regulations protect all native birds and their nests and make it unlawful to "take" (e.g., hunt, pursue, catch, capture, or kill) any migratory bird and their active nests. Within Los Angeles County, CDFG Region 5 has responsibility for administering these requirements.

California Fish and Game Code (Sections 1600–1616)
Pursuant to Sections 1600-1616 of the California Fish and Game Code, any entity proposing to divert, obstruct, or substantially alter the bed, bank, or channel of a stream or lake must first obtain a Streambed Alteration Agreement from the CDFG. Regulations promulgated by the CDFG define streams to include bodies of water that flow at least periodically or intermittently through a bed or channel having banks and supporting aquatic life, including watercourses having surface or subsurface flow that supports or has supported riparian vegetation. Jurisdiction under this statute encompasses all portions of the bed, banks, and channel of any stream, extending laterally to the upland edge of riparian vegetation. Within Los Angeles County, CDFG Region 5 has responsibility for administering these requirements.

Local

Los Angeles County General Plan
Conservation and Open Space Element Policy 7. Preserve SEAs and habitat management areas by appropriate measures, including preservation, mitigation, and enhancement.

Antelope Valley Areawide General Plan
Policy Statement 69. Protect significant vegetation such as the Joshua Tree.

Policy Statement 123. Preserve the Antelope Valley's SEAs in as viable and natural a condition as possible, recognizing the resource values at stake and the constraints imposed by competing priorities and objectives.

Policy Statement 141. Prohibit the harvesting of Joshua or juniper trees for fuel purposes or for transplantation out of their normal habitat area.

Environmental Setting

The Project site is located in a relatively low population area in the western Antelope Valley, where open land, scattered residences and agriculture are the predominant land uses. The Project site produced carrots up until 2009. Vegetation on the site is largely disturbed annual grassland. There is a large ephemeral drainage channel shown on USGS maps (Figure FLOOD-2) that extends east to west across the Western Parcel and the northwestern corner of the Eastern Parcel. The Project is located within the Mojave Desert geographical region (Sawyer and Keeler-Wolf, 1995).

There is one Los Angeles County–designated SEA in the vicinity of the Project Site. As shown on Figure BIOTA-1, SEA #60 (4,430-acres) is associated with Joshua tree woodland habitat and comprises nine discrete habitat fragments within the Project region. Habitat is relatively undisturbed and indicative of the Antelope Valley's native vegetation. The intervening lands between the habitat blocks that make up SEA #60 presumably contained Joshua tree woodlands at some time, but have been disturbed by human activity and no longer exhibit this habitat. Thus, there is no longer an intact, connected Joshua tree woodland habitat within the SEA (AVSREIR, 2010). The Eastern Parcel of the Project site borders one fragment and the proposed generation-tie transmission line to the Neenach Substation and access road abut the border of another fragment of SEA #60.

Overview of Methodology

The U.S. Fish and Wildlife Service (USFWS) species list for Los Angeles County was reviewed for federally listed, candidate, and proposed species that potentially occur on or near the Project site

(USFWS, 2010). The species list for eastern Kern County (USFWS, 2010) was also reviewed, as the Project is located near the Los Angeles County-Kern County border. In addition, the California Natural Diversity Database (CNDDB) was consulted for documented occurrences of special-status species within the site boundary and within a 5-mile radius buffer of the site (CNDDB, 2010). A search of the California Native Plant Society (CNPS) online inventory (CNPS, 2010) was conducted to identify additional special-status plant species with the potential to occur on the Project site. The principle references used in naming and classifying the vegetation of the Project area include *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland, 1986) and *A Manual of California Vegetation* (Sawyer and Keeler-Wolf, 1995). Table BIO-1 provides a list of species identified during the information review. A field investigation for special-status plants and wildlife was conducted by CH2M HILL in May and June 2010; results are summarized below.

Field Investigation

Natural Habitat Communities

There are no sensitive natural communities within the site boundary. However, eight sensitive natural communities are located within 10 miles of the Project: southern riparian scrub, Valley needlegrass grassland, wildflower field, southern cottonwood willow riparian forest, Valley oak woodland, southern riparian forest, southern willow scrub, and southern sycamore alder riparian woodland. The nearest of these communities, southern riparian scrub, is located 3 miles from the Project site.

The Project site does not contain riparian habitat. The ephemeral drainage channel located immediately north of the site is devoid of riparian vegetation and is choked with Russian thistle (*Salsola tragus*) (Robert Hernandez, 2010).

Plants

A rare plant survey was conducted by CH2M HILL biologists from May 5 to 7, 2010, and from May 12 to 14, 2010 (see Appendix G). The survey methods were consistent with the floristic survey methods described by CDFG and USFWS (Cypher, 2002). A comprehensive list of plants identified during the survey is provided therein. No rare plants were observed during the surveys, and no habitat was identified for rare plants. In addition, the CNDDB has no records of rare plants within the site boundaries. Three rare plant species were documented outside of the site but within the 10-mile CNDDB search area: round-leaved filaree (*California macrophylla*; 6 miles west of site), Pierson's morning glory (*Calystegia peirsonii*; 6 miles south and southeast of the site), and Madera leptosiphon (*Leptosiphon serrulatus*; 8.5 miles northwest of the site) (see Figure BIOTA-2). These species are associated habitat types that are not present on the Project site and/or are found at higher elevations.

The predominant vegetation community on the Project site is disturbed annual grassland with varying degrees of disturbance caused by agricultural activities. These disturbances include discing and plowing, as well as the establishment and proliferation of non-native, weedy vegetation. Vegetation in all areas is dominated by ruderal species, including cheatgrass (*Bromus tectorum*), bristly fiddleneck (*Amsinkia tessellata*), red-stem filaree (*Erodium cicutarium*), tumblemustard (*Sysimbrium altissimum*), and foxtail barley (*Hordeum jubatum*).

Some rubber rabbitbrush (*Chrysothamnus nauseosus*) is becoming established in the eastern portion of the site. Russian thistle (*Salsola tragus*) is present in some areas, including the ephemeral stream channel located immediately north of the Project and outside the site boundary. There is no riparian vegetation along the channel banks; however, fireweed (*Epilobium angustifolia*) was documented.

Wildlife

Wildlife habitat at the site is predominantly agricultural cropland that exhibits varying degrees of disturbance from agricultural activities such as discing and plowing, as well as from the establishment and proliferation of non-native, weedy vegetation. Rubber rabbitbrush is becoming established in the eastern

portion of the site where the fields have been fallow for a number of years. However, the rabbitbrush is very sparse where it appears the fields have been fallow much longer than some of the other, more recently disturbed fields. A rural home site is located in the southwestern portion of the Project site, along with associated structures, dirt roads, and disturbed annual grassland. Immediately north of the Project and outside the site boundary is an ephemeral stream channel that is generally oriented east-west. The stream is devoid of riparian habitat.

The CNDDB had no records of special-status species within the site boundary but identified the following 11 special-status species within the 10-mile search area: American badger (*Taxidea taxus*; 2.5 miles northwest of the site), western burrowing owl (*Athene cunicularia*; 3 miles west of the site), tricolored blackbird (*Agelaeius tricolor*; 2.5 miles west of the site), coast horned lizard (*Phrynosoma coronatum blainvillii*; 4 miles southeast of the site), prairie falcon (*Falco mexicanus*; 6.7 miles southwest of the site), Tehachapi pocket mouse (*Perognathus alticola inexpectatus*; 6.9 miles west of the site), Le Conte's thrasher (*Toxostoma lecontei*; 7 miles northeast of the site), mountain plover (*Charadrius montanus*; 8 miles east of the site), Swainson's hawk (*Buteo swainsoni*; 9.25 miles east of the site); hoary bat (*Lasiurus cinereus*; 7.5 miles southeast of the site), and California condor (*Gymnogyps californianus*; 9.4 miles northwest of the site) (see Figure BIOTA-2).

General wildlife recorded incidentally during 2010 surveys included: California ground squirrel (*Spermophilus beecheyi*), common raven (*Corvus corax*), red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), ferruginous hawk (*Buteo regalis*), barn owl (*Tyto alba*), house finch (*Carpodacus mexicana*), western meadowlark (*Sturnella neglecta*), horned lark (*Eremophila alpestris*), black-throated sparrow (*Amphispiza bilineata*), western fence lizard (*Sceloparus occidentalis*), spiny lizard (*Sceloparus olivaceus*), and western whiptail (*Aspidoscelis tigris*).

Potentially suitable habitat was identified at the site for the following special-status species: American badger (*Taxidea taxus)*, burrowing owl (*Athene cunicularia)*, tricolored blackbird (foraging only) (*Agelaeius tricolor)*, prairie falcon (foraging only) (*Falco mexicanus*), and coast horned lizard (*Phrynosoma coronatum)*, which are all CDFG species of special concern. In addition, suitable foraging habitat for the state threatened Swainson's hawk *(Buteo swainsoni*) is present throughout the site; suitable nesting habitat for this species may be present in a row of pines (*Pinus sp.*) that are planted along West Avenue B-8 and continue south along the western edge of the Eastern Parcel. No nests were documented in these trees during the 2010 rare plant survey.

A burrowing owl protocol survey (California Burrowing Owl Consortium, 1993) was initiated at the Project site on April 18, 2010, by Phoenix Ecological Consulting. Five owls and two active burrows have been documented on the site (see Appendix H).

<u>Impact Discussion</u>

Impacts related to biological resources have been analyzed using significance criteria derived from the County of Los Angeles Initial Study Checklist and the CEQA Appendix G checklist. Taking into consideration the significance criteria of both checklists (which are nearly identical), the Project is considered to have a potentially significant effect if one or more of the following were to occur:

a. Is the project site located within Significant Ecological Area (SEA), SEA Buffer, or coastal Sensitive Environmental Resource (ESHA, etc.), or is the site relatively undisturbed and natural?

As shown on Figure BIOTA-1, the Alpine Solar Project site is not located within an SEA, SEA Buffer, or coastal Sensitive Resource (ESHA) and therefore, the Project would not require Technical Advisory Committee (SEATAC) review. The gen-tie transmission line will be located adjacent to 210th Street West and the proposed Project access road within a project utility corridor along the border of SEA #60. Placement of the transmission line support structures could avoid Joshua trees, thereby minimizing

impacts in compliance with policy statements 69 and 141 of the Antelope Valley Areawide General Plan. With the incorporation of Project mitigation, impacts would be less than significant.

b. Will grading, fire clearance, or flood related improvements remove substantial natural habitat areas?

The Project would be located on degraded former agricultural land. Invasive species have cultivated the site and as noted above, rare plant protocol surveys did not reveal any listed plant species. Given that the Project site does not contain natural habitat areas, no impacts would occur.

There are no sensitive natural communities within the site boundary. However, eight sensitive natural communities are located within 10 miles of the Project: southern riparian scrub, Valley needlegrass grassland, wildflower field, southern cottonwood willow riparian forest, Valley oak woodland, southern riparian forest, southern willow scrub, and southern sycamore alder riparian woodland. The nearest of these communities, southern riparian scrub, is located 3 miles from the Project site. Based on the fact that the nearest sensitive natural community is located 3 miles from the Project site and effects from project development are not expected to travel beyond the site boundary, no impacts on sensitive natural communities are expected.

c. Is a drainage course located on the project site that is depicted on USGS quad sheets by a dashed blue line or that may contain a bed, channel, or bank of any perennial, intermittent or ephemeral river, stream, or lake?

The Project site does contain a drainage channel noted as a blue line on USGS quad sheets. However, Project components have been offset from the centerline of the drainage channel 100 feet to avoid impacting the drainage channel. Additionally, as noted above, no riparian species are present in the channel; Russian thistle (*Salsola tragus*) and fireweed (*Epilobium angustifolia*) were observed. No wetlands were documented within the Project site; therefore, no impacts to wetlands are expected. Given that the Project design provides a 100-foot setback and that the drainage channel does not provide suitable riparian habitat, impacts would be less than significant.

d. Does the project site contain a major riparian or other sensitive habitat (e.g. coastal sage scrub, oak woodland, sycamore riparian, woodland, wetland, etc.)?

The Project site was actively farmed for many years until fall 2009, which eliminated any potential sensitive habitats. The site has been colonized by invasive weedy species, as noted above. No riparian species are present in the drainage channel; Russian thistle (*Salsola tragus*) and fireweed (*Epilobium angustifolia*) were observed. No wetlands were documented within the Project site; therefore, no impacts to wetlands are expected. The nearest sensitive natural community is located 3 miles from the Project site and effects from project development are not expected to travel beyond the site boundary. There would be no impact to sensitive habitat.

e. Does the project site contain oak or other unique native trees (specify kinds of trees)?

The Project site does not contain oak or any other unique native trees. Joshua trees are located along the western side of 210th Street West that could be affected by the gen-tie transmission line. However, proposed mitigation measures require placement of transmission poles in locations that will not affect Joshua trees. Historical farming activities eliminated any trees from the site. Impacts would be less than significant.

f. Is the project site habitat for any known sensitive species (federal or state listed endangered, etc.)?

Suitable foraging habitat for the state threatened Swainson's hawk is onsite. Suitable nesting habitat for this species may be present in a row of pines (*Pinus sp.*) that are planted along West Avenue B-8 and continue south along the western edge of the Eastern Parcel. No hawks were observed, and no nests were

documented in these trees during 2010 surveys. Potentially suitable habitat was identified at the site for the following CDFG species of special concern: American badger, burrowing owl, tricolored blackbird (foraging only), prairie falcon (foraging only), and coast horned lizard. None of these species, except burrowing owl, was noted onsite during biological surveys in May and June 2010.

The Project site is habitat for the burrowing owl (*Athene cunicularia*). Burrowing owl are small, long-legged, ground-dwelling owls that occur from British Columbia throughout North America and portions of Central and South America. They winter in the southern latitudes and many remain as year-long residents in Southern California. Protocol surveys for this species were conducted in May and June 2010. A total of five adult owls were detected onsite; consisting of two pairs and one unmated male. The results of the protocol surveys are contained in Appendix H.

Many species of wildlife that may use the site will not be affected by project development, as the site is already disturbed from agricultural uses and is of limited wildlife value, except to some edge-adapted species. The solar modules will be raised above the ground and will potentially continue to allow movement or migration of edge-adapted wildlife species that may use the site and its vicinity. The solar modules may also provide thermal cover for some ground-dwelling species. However, avian predators/ scavengers (e.g., Swainsons' hawks), if present, would experience a reduction in foraging habitat and potential nesting habitat. With incorporation of mitigation measures described below, impacts to sensitive species will be less than significant.

g.1. 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 California Department of Fish and Game or U.S. Fish and Wildlife Service?

Please see the discussion in f.

g.2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

The Project site does not contain riparian habitat. The ephemeral stream channel located just north of the site is devoid of riparian vegetation and is choked with Russian thistle (*Salsola tragus*) (Hernandez, 2010). Based on the fact that no riparian habitat is present, no impacts are expected from development of the Project.

g.3. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No wetlands are present within the Project site; therefore, no impacts will occur.

g.4. 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?

The Project would not substantially interfere with the movement of wildlife species. The Project site has been used for agriculture up until fall 2009. The routine plowing, discing, and planting would cause wildlife to use other migratory pathways. However, the onsite drainage channel would allow for movement of wildlife. The Project would maintain a 100-foot setback from the centerline of the drainage channel, thereby allowing wildlife to move freely within this channel and through the Project site. With the incorporation of proposed mitigation measures, impacts would be less than significant.

g.5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The Antelope Valley Areawide General Plan is the relevant local policy document affecting development on the Project site. This document does not contain any specific policies with which the Alpine Solar Project would conflict. Therefore, there would be no impact.

g.6. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The Project site and vicinity are located within the Plan Area of the West Mojave Plan Final Environmental Impact Statement (EIS)/EIR (Bureau of Land Management [BLM], 2005), which includes a proposed Habitat Conservation Plan (HCP) for 49 species. A Record of Decision was issued for the EIS/EIR in 2006 (BLM, 2006). However, the HCP has not been finalized, and Los Angeles County has not applied for incidental take permits for the species addressed in the plan, which includes burrowing owl and coast horned lizard. Los Angeles is a participant in the HCP and reviews; it approves land use applications that would be in compliance with the requirements of the proposed HCP if the HCP were in effect, and with California Desert Conservation Area (CDCA) Plan of 1980, as amended (BLM, 1999). Both the West Mojave Plan and the CDCA Plan allow for the development of energy facilities, provided that sensitive resources are avoided wherever possible. The Project would be located on degraded land with limited habitat value and no documented special-status species or other important biological resources on the site. Therefore, the Project would not conflict with either the West Mojave Plan or the CDCA Plan; therefore, there would be no impact.

Mitigation and Residual Impact

Potential impacts related to biological resources would be mitigated to an insignificant level: (1) through compliance with applicable codes, standards, and ordinances; (2) by preparing and implementing a final geotechnical report containing site-specific recommendations for the Project; and (3) by implementing the following mitigation measures:

BIO-1. Construction plans will be developed to avoid active burrows within 165 feet of the impact zone or to provide for relocation of burrowing owls to a protected onsite or offsite mitigation site. If avoidance is not practicable, a mitigation and monitoring plan will be developed in consultation with CDFG and will be implemented and funded by the applicant.

BIO-2. Pre-construction surveys will be conducted for nesting birds and the American badger. If necessary, construction plans will be developed to avoid nesting periods or to provide for avoidance or relocation of the American badger.

BIO-3. Pre-construction surveys will be conducted for active Swainson's hawk nests in suitable habitat located within 0.5 mile of the Project (California Energy Commission [CEC] and CDFG, 2010). If necessary, construction plans will be developed to avoid active nests within 0.5 mile and to avoid construction during the species' sensitive nesting period (generally March 1 to September 15), or a biological monitor will observe active nests during construction for signs of distress. If the monitor determines that construction activities are negatively affecting the nesting birds, construction will be halted until such time as the nestlings fledge or otherwise exhibit signs of self sufficiency.

BIO-4. Pre-construction clearance surveys will be conducted for ground-dwelling special-status species, including coast horned lizard, to ensure that these species are excluded from the impact zone during construction.

BIO-5. Prior to issuance of a grading permit, a habitat management plan for the burrowing owl will be developed for portions of the site supporting suitable habitat for burrowing owl and away from Project

facilities and the solar PV modules. Specifically, this plan will be developed for implementation in the undeveloped areas surrounding the onsite drainage channel and in the northernmost portion of the Western Parcel and will include the following elements:

- Pre-construction clearance surveys will be required.
- If occupied burrows are to be removed, the plan will contain schematic diagrams of artificial burrow designs and a map of potential artificial burrow locations that would compensate for the burrows removed.
- A methodology for the eviction and passive relocation of any owls from the impact area to proactively established artificial burrows.
- Provisions for vegetation management, specifying the maximum allowable vegetative cover adjacent to established artificial burrows and the methodology to be used in maintaining the appropriate cover.
- Measures prohibiting the use of rodenticides.
- The plan will specify a minimum suitable foraging habitat to be preserved or created through revegetation and restoration practices for every active burrowing owl burrow within the Project site. These mitigation areas will not be located in areas shaded by the proposed solar arrays, and will not be subject to vegetation mowing or other fuel management practices. Foraging areas will be located adjacent to suitable natural or artificial burrow locations. The Burrowing Owl Habitat Management Plan may be prepared and presented as a stand-alone document and will be submitted to the LACDRP and CDFG for review and approval prior to issuance of a grading permit for the Project.

Based on implementation of the above mitigation measures, the potential impacts associated with biological resources would be reduced to a less than significant level.

Cumulative Impact

The Project's incremental effect on biotic resources would not be cumulatively considerable, and the Project's cumulative effect is therefore not significant. Further, the cumulative impact on biotic resources that would result from the combination of the Project's incremental effect and the effects of the other projects listed in Appendix A and shown on Figure CUMULATIVE-1 would not be significant. To a large extent, the Project site has not provided valuable habitat because of prior agricultural operations. Although implementation of the Project would eliminate potential foraging habitat, the large drainage channel and northern portion of the Western Parcel would remain unaffected by Project development, thereby providing foraging and nesting habitat for sensitive species within the Project area. Therefore, the Project would not contribute to cumulative impacts.

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, **biotic** resources?

☐ Potentially significant ☒ Less than significant with project mitigation ☐ Less than significant/ No impact

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TABLE BIO-1
Special-Status Species that May Occur in the Project Area or Vicinity

Common Name	Scientific Name	Habitat Preference Distribution and Elevation Range	Federal	State	CNPS	Suitable Habitat Present on Site?
Plants						
Braunton's milk-vetch	*Astragalus brauntonii*	Chaparral, coastal scrub, Valley, and foothill grassland/recent burns or disturbed areas; usually sandstone with carbonate layers; 4-640 m	E	-	1B.1	Yes
Nevin's barberry	*Berberis nevinii*	Chaparral, cismontane woodland, coastal scrub, riparian scrub; sandy or gravelly soils; 274-825 m	E	E	1B.1	No
Round-leaved filaree	*California macrophylla*	Clay soils 15-1200 min cismontane woodland, valley and foothill grassland	-	SC	1B.1	No
Slender mariposa-lilly	*Calochortus clavatus var. gracilis*	Chaparral, coastal scrub, Valley and foothill grassland; 320-100 m	-	-	1B.2	No
Peirson's morning-glory	*Calystegia peirsonii*	Chaparral coastal scrub, chenopod scrub, cismontane woodland, lower montane coniferous forest. Often in disturbed areas or along roadsides or in grassy, open areas 390-1470 m. Open areas along road, exposed rocky soils, and on steep cliffs.	-	-	4.2	No
San Fernando Valley spineflower	*Chorizanthe parryi var. Fernandina*	Coastal scrub habitat on sandy banks and along dry washes. Sandy soils 3-	C	E	1B.1	No
Clokey's cryptantha	*Cryptantha clokeyi*	Mojavean desert scrub; 800-1280 m	-	-	1B.1	No
Slender-horned spineflower	*Dodecahema leptoceras*	Chaparral, cismontane woodland, coastal scrub; sandy soils; 200-760 m	E	E	1B.1	No
Conejo dudleya	*Dudleya parva*	Coastal scrub, Valley and foothill grassland; rocky or gravelly, clay or volcanic soils; 60-450 m	T	-	1B.2	Yes
Marcescent dudleya	*Dudleya cymosa spp. Marcescens*	Chaparral; volcanic, rocky soils; 150-520 m	T	R	1B.2	No

TABLE BIO-1
Special-Status Species that May Occur in the Project Area or Vicinity

Common Name	Scientific Name	Habitat Preference Distribution and Elevation Range	Federal	State	CNPS	Suitable Habitat Present on Site?
Santa Monica Mountains live-forever	*Dudleya cymosa spp. Ovatifolia*	Chaparral, coastal scrub/volcanic or sedimentary, rocky soils; 150-1675 m	T	-	1B.2	No
Verity's dudleya	*Dudleya verity*	Chaparral, cismontane woodland, coastal scrub; volcanic, rocky soils; 60-120 m	T	-	1B.2	No
Delicate bluecup	*Githopsis tenella*	Chaparral, cismontane woodland; mesic; 1100-1900 m	-	-	1B.3	No
Madera leptosiphon	*Leptosiphon serrulatus*	Cismontane woodland, lower montane coniferous woodland; 300-1300 m	-	-	1B.2	No
Short-joint beavertail	*Opuntia basilaris* var. *brachyclada*	Chaparral, Joshua tree woodland, Mojave Desert scrub, and pinyon-juniper woodland communities at elevations of 900- 2000 m	-	-	1B.2	No
Spreading navarretia	*Navarretia fossalis*	Chenopod scrub, marshes and swamps, playas, vernal pools; 30-1300 m	T	-	1B.1	No
California orcutt grass	*Orcuttia californica*	Vernal pools; 15-660 m	E	E	1B.1	No
Lyon's pentachaeta	*Pentachaeta lyonii*	Chaparral, coastal scrub, Valley and foothill grassland; rocky, clay soils; 30-630 m	E	E	1B.1	Yes
Greata's aster	*Symphyotrichum greatae*	Found in chaparral, cismontane woodland, mesic canyons 800-1500 m Along stream in riparian woodland. Associated with *Alnus rhombifolia, Salix laevigata, Quercus chrysolepis, Typha latifolia, Xanthium strumarium, and Juncus microphyllus.*	-	-	1B.3	No

TABLE BIO-1
Special-Status Species that May Occur in the Project Area or Vicinity

Common Name	Scientific Name	Habitat Preference Distribution and Elevation Range	Federal	State	CNPS	Suitable Habitat Present on Site?
Mammals						
American badger	*Taxidea taxus*	Herbaceous, shrub, and open stages of most habitats with dry, friable soils	-	SC	NA	Yes
Hoary bat	*Lasiurus cinereus*	Open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths, requires water.	-	SC	NA	No
Tehachapi pocket mouse	*Perognathus alticolus inexpectatus*	Most commonly in ponderosa and Jeffrey pine habitats, and uncommon in mixed chaparral and sagebrush habitats. Also found recently in fallow grain field in Russian thistle. Elevation range 1067-1839 m.	-	SC	NA	No
Birds						
California least tern	*Sterna antillarum browni*	Coastal, marine habitat	E	E/FP	NA	No
Western snowy plover	*Charadrius alexandrines nivosus*	Nests and forages on coastal beaches and inland lake edges.	T	SC	NA	No
Western burrowing owl	*Athene cunicularia*	Associated with open habitats, including low-growing grasslands and agricultural fields. It has adapted well to locations on the urban fringe, such as flood control channels or agricultural areas.	-	SC	NA	Yes

TABLE BIO-1
Special-Status Species that May Occur in the Project Area or Vicinity

Common Name	Scientific Name	Habitat Preference Distribution and Elevation Range	Federal	State	CNPS	Suitable Habitat Present on Site?
California condor	*Gymnogyps californianus*	Requires vast expanses of open savannah, grasslands, and foothill chaparral in mountain ranges of moderate altitude. Deep canyons containing clefts in the rocky walls provide nesting sites. Forages up to 100 miles from roost/nest. Roosting area October to April. Nesting and roosting area in La Liebre Mountain (year-long use).	E	E	NA	No
Swainson's hawk	*Buteo swainsoni*	Nests in stands with few trees, juniper-sage flats, riparian habitat, and oak savannah. Forages in adjacent grasslands and agricultural fields and pastures.	-	T	NA	Yes
Prairie falcon	*Falco mexicanus*	Dry, open terrain, either level or hilly. Breeding sites located on cliffs, forages far afield, even to marshlands and ocean shores. Uncommon permanent resident that ranges from southeastern deserts northwest throughout the Central Valley and along the inner Coast Ranges and Sierra Nevada.	-	SC	NA	Yes (foraging only)
Least Bell's vireo	*Vireo bellii pusillus*	Nests and forages in riparian woodlands and scrub.	E	E	NA	No
Southwestern willow flycatcher	*Empidonax traillii extimus*	Nests and forages in riparian woodlands and scrub.	E	E	NA	No

TABLE BIO-1
Special-Status Species that May Occur in the Project Area or Vicinity

Common Name	Scientific Name	Habitat Preference Distribution and Elevation Range	Federal	State	CNPS	Suitable Habitat Present on Site?
Tricolored blackbird	*Agelaius tricolor*	Open-range foraging habitat of natural grassland, woodland, or agricultural cropland; breeds near fresh water, preferably in emergent wetland with tall, dense cattails, but also in thickets of willow, blackberry, wild rose, tall herbs. Feeds in grassland and cropland habitats. In southern deserts; found regularly in Antelope Valley, Los Angeles County.	-	SC	NA	Yes (foraging only)
Yellow-billed cuckoo	*Coccyzus americanus*	Deciduous woodland or thickets with dense understory foliage, usually near slow-moving watercourses, backwaters, or seeps.	C	E	NA	No
Le Conte's thrasher	*Toxostoma lecontei*	Desert flats, washes and alluvial fans with sandy and/or alkaline soil and scattered shrubs.	-	SC*	NA	No
Amphibians and Reptiles						
Tehachapi slender salamander	*Batrachoseps stebbinsi*	Slopes between 25 and 35 degrees with moist and loamy soil with abundant oak leaf litter. Vegetation includes live oak, black oak and miner's lettuce. Closed canopy cover. Small number of isolated localities in the Piute and Tehachapi Mts. of Kern Co., and perhaps in Los Angeles County. Elevation 760 to 1,500 m.	-	T	NA	No
Arroyo toad	*Bufo californicus*	Shallow pools, and open, sandy stream terraces with cottonwoods, oaks and willows.	E	SC	NA	No

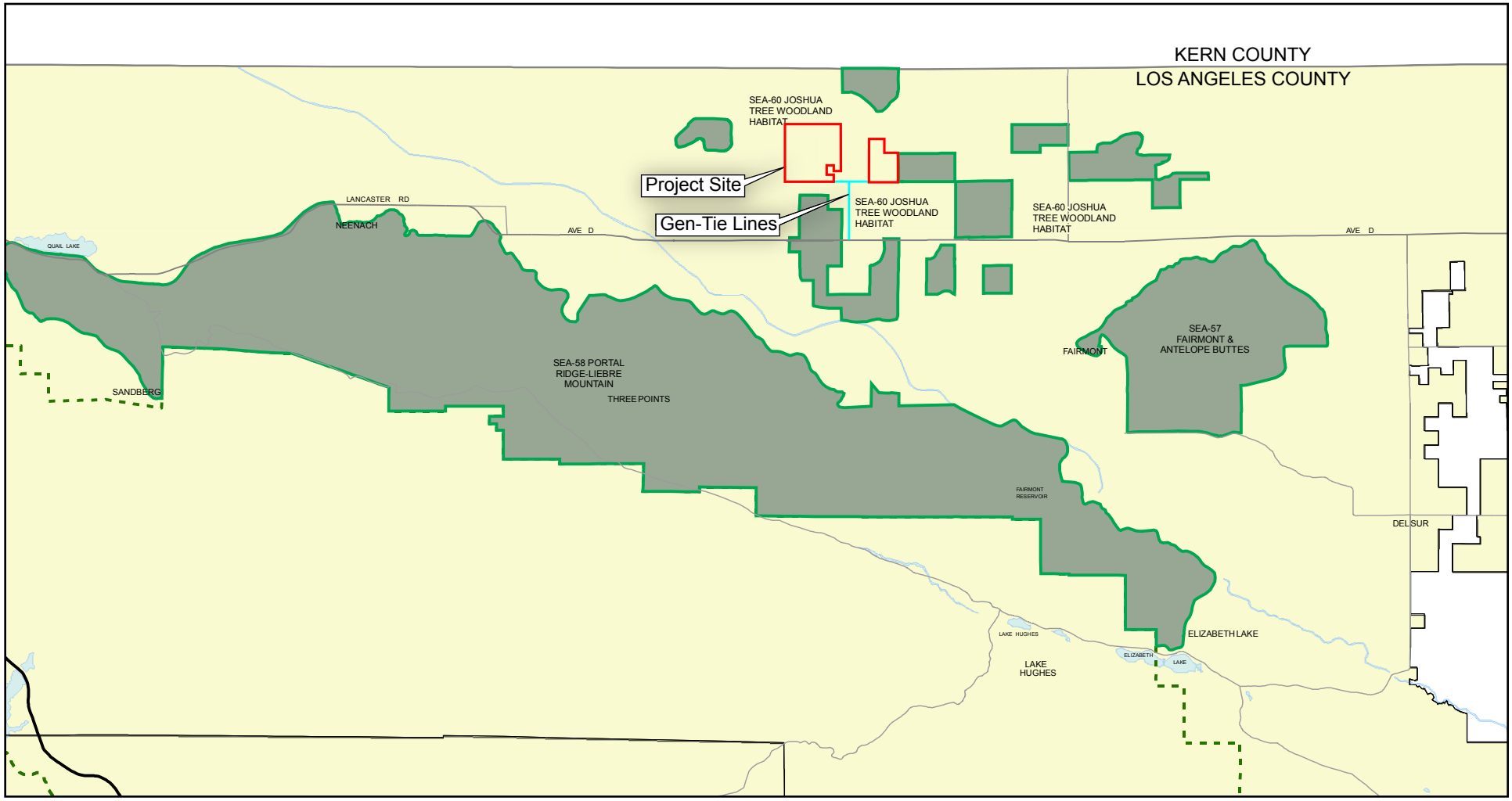
TABLE BIO-1
Special-Status Species that May Occur in the Project Area or Vicinity

Common Name	Scientific Name	Habitat Preference Distribution and Elevation Range	Federal	State	CNPS	Suitable Habitat Present on Site?
California red-legged frog	*Rana aurora dratonii*	Ponds, marshes, creeks with adjacent riparian habitat.	T	SC	NA	No
Coast (San Diego) horned lizard	*Phrynosoma coronatum (blainvillii)*	Valley foothill hardwood, conifer and riparian habitats, as well as in pine-cypress, juniper and annual grassland habitats. Occurs in the Sierra Nevada foothills from Butte Co. to Kern Co. and throughout the central and southern California coast. Found up to 1,200 m in the Sierra Nevada foothills and up to 1,800 m in the mountains of southern California.	-	SC	NA	Yes
Desert tortoise	*Gopherus agasazii*	Variety of habitats from sandy flats to rocky foothills below 5000 feet.	T	T	NA	No
Southwestern pond turtle	*Actinemys marmorata pallid*	Permanent or nearly permanent bodies of water in many habitat types; below 6,000 ft elevation. Requires basking sites such as partially submerged logs or open mud or banks. North of San Francisco to northwest Baja California and west of the Mojave Desert.	-	SC	NA	No
Fish						
Southern California steelhead	*Oncorhunchus mykiss*	Perennial streams	E	SC	NA	No
Tidewater goby	*Euculcogobius newberryi*	Estuarine lagoons	E	SC	NA	No
Unarmored threespine stickleback	*Gasterosteus aculeatus williamsonii*	Freshwater streams with pools, eddies, and refugia	E	E	NA	No

TABLE BIO-1
Special-Status Species that May Occur in the Project Area or Vicinity

Common Name	Scientific Name	Habitat Preference Distribution and Elevation Range	Federal	State	CNPS	Suitable Habitat Present on Site?
Invertebrates						
Riverside fairy shrimp	*Streptocephalus woottoni*	Vernal pools	E	-	NA	No

*Special status only in San Joaquin Valley
Notes:
State and Federal Codes:
T – Threatened
E –Endangered
C – Candidate for listing as Threatened or Endangered
R – Rare species
SC – Species of special concern
CNPS Codes:
1B: Rare, threatened, or endangered in California and elsewhere
4: Limited Distribution (Watch List)
0.1: Seriously endangered in California
0.2: Rare, threatened or endangered in California, but common elsewhere
0.3: Not very endangered in California



Legend

- *Significant Ecological Area (SEA)*
- *National Forest Boundary*
- *Unincorporated Area*
- *Incorporated City*

N

0 2 4

Approximate scale in miles

Figure BIOTA-1
Significant Ecological Areas
Alpine Solar Project
July 2010

Source: Los Angeles County Department of Regional Planning

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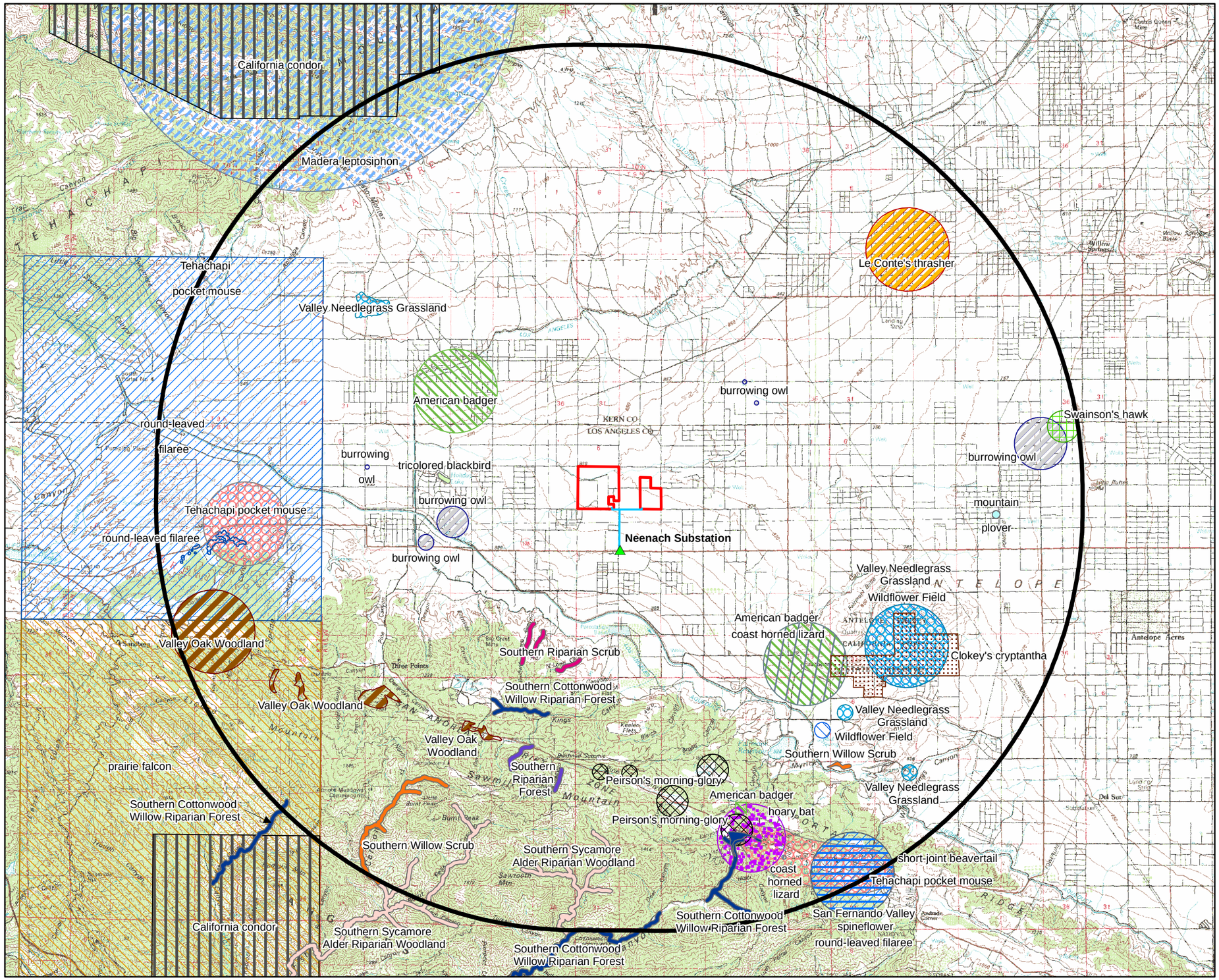
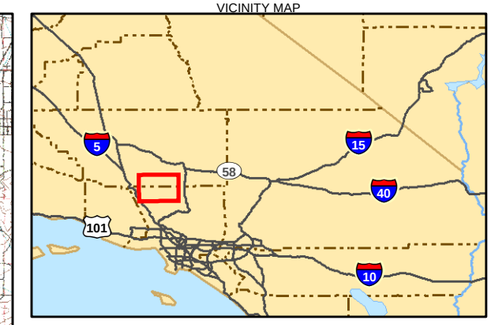
CH2MHILL



VICINITY MAP



LEGEND

- Existing Substation
- Proposed Gen-tie Route (66 kV)
- Project Site
- 10-Mile Project Buffer

Special Status Species

- American badger
- burrowing owl
- California condor
- Clokey's cryptantha
- coast horned lizard
- hoary bat
- Le Conte's thrasher
- Madera leptosiphon
- Peirson's morning-glory
- San Fernando Valley spineflower
- short-joint beavertail
- Swainson's hawk
- Tehachapi pocket mouse
- tricolored blackbird
- mountain plover
- prairie falcon
- round-leaved filaree

Sensitive Natural Communities

- Southern Cottonwood Willow Riparian Forest
- Southern Riparian Forest
- Southern Riparian Scrub
- Southern Sycamore Alder Riparian Woodland
- Southern Willow Scrub
- Valley Needlegrass Grassland
- Valley Oak Woodland
- Wildflower Field

N

0 1 2
Miles

FIGURE BIOTA-2
California Natural Diversity Database Species within 10 Miles
Alpine Solar Project
July 2010

CH2MHILL

RESOURCES - 4. ARCHAEOLOGICAL/HISTORICAL/PALEONTOLOGICAL

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☐	☒	Is the project site in or near an area containing known archaeological resources or containing features (drainage course, spring, knoll, rock outcroppings, or oak trees) that indicate potential archaeological sensitivity?
b.	☐	☐	☒	Does the project site contain rock formations indicating potential paleontological resources?
c.	☐	☒	☐	Does the project site contain known historic structures or sites?
d.	☐	☐	☒	Would the project cause a substantial adverse change in the significance of a historical or archaeological resource as defined in 15064.5? (CEQA Checklist V. Cultural Resources. a. and b.)
e.	☐	☐	☒	Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? (CEQA Checklist V. Cultural Resources. c.)
f.	☐	☐	☒	Other factors? Disturb any human remains, including those interred outside of formal cemeteries? (CEQA Checklist V. Cultural Resources. d.)

☒ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design ☒ Phase 1 Archaeology Report

<u>Regulatory Setting</u>

This section provides an overview of state and local regulations related to cultural and paleontological issues applicable to the Project.

Federal

Federal laws, regulations, and guidelines are not applicable to the Project since it does not meet the definition of a federal undertaking (36 CFR § 800.16).

State

California Health and Safety Code, Section 7052
Section 7052 of the California Health and Safety Code establishes a felony penalty for mutilating, disinterring, or otherwise disturbing human remains, except by relatives.

California Penal Code, Section 622.5
Section 622.5 of the California Penal Code establishes a misdemeanor penalty for injuring or destroying objects of historical or archaeological interest located on public or private lands, but specifically excludes the landowner.

California Public Resources Code, Section 5097.5
Section 5097.5 of the California PRC establishes a misdemeanor penalty for the unauthorized disturbance or removal of archaeological, historical, or paleontological resources located on public lands.

California Register of Historical Resources
In 1992, the California Legislature established the California Register of Historical Resources (CRHR). The CRHR is used as a guide by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate which properties are to be protected, to the extent prudent and feasible, from substantial adverse change. The CRHR, as instituted by the California PRC, automatically includes all California properties already listed in the National Register of Historic Places (NRHP) and those formally determined to be eligible for the NRHP (Categories 1 and 2 in the State Inventory of Historical Resources), as well as specific listings of State Historical Landmarks and State Points of Historical Interest. The CRHR also may include various other types of historical resources that meet the criteria for eligibility, including the following:

- Individual historic resources
- Resources that contribute to a historic district
- Resources identified as significant in historic resource surveys
- Resources with a significance rating of Category 3 through Category 5 in the State Inventory (Categories 3 and 4 refer to potential eligibility for the NRHP; Category 5 indicates a property with local significance)

Evaluation of Resources Less than 50 Years Old
A resource is usually considered for its historical significance after it reaches the age of 50 years. This threshold is not absolute; it was chosen as a reasonable span of time after which a professional evaluation of historical value/importance can be made.

State Historic Resources Commission and the Office of Historic Preservation
In accordance with state law (California PRC Section 5020.4), the primary responsibility of the State Historic Resources Commission (SHRC) is to review applications for listing historic and archaeological resources on the NRHP, the CRHR, and the California Historical Landmarks and California Points of Historical Interest registration programs. The Office of Historic Preservation (OHP) is the governmental agency primarily responsible for the statewide administration of the historic preservation program in California. The chief administrative officer for the OHP is the State Historic Preservation Officer (SHPO). The SHPO is also the executive secretary of the SHRC. The mission of the OHP and the SHRC, in partnership with the people of California and governmental agencies, is to preserve and enhance California's irreplaceable historic heritage as a matter of public interest so that its vital legacy of cultural, educational, recreational, aesthetic, economic, social, and environmental benefits will be maintained and enriched for present and future generations.

Local

Southern California Association of Governments

The Southern California Association of Governments (SCAG) Growth Management Chapter (GMC) has instituted policies regarding the protection of cultural resources. SCAG GMC Policy No. 3.21 "encourages the implementation of measures aimed at the preservation and protection of recorded and unrecorded cultural resources and archaeological sites" (Southern California Association of Governments, 2001).

Environmental Setting

The Project surroundings consist primarily of farmlands, rural residences, and undeveloped areas, some of which are designated as Los Angeles County SEAs. The Project site includes undeveloped land and land currently and formerly in agricultural production. See Figure CULTURAL-1.

Archaeological and Historical Resources

A detailed discussion of the prehistory, ethnography, and history of the Project site and its surroundings is available in the "Cultural Resources Survey of 600 Acres of Land for the Alta Vista Solar Generating Station Project Site, Los Angeles County, California" (Tetra Tech EC, Inc. [Tetra Tech], 2008a).

Tetra Tech conducted an archaeological and historical records search on February 22 and May 22, 2008, at the South Central Coastal Information Center of the California Historical Resources Information Center (CHRIS) at California State University, Fullerton. The records search included CHRIS files as well as a search of California Points of Historical Interest, California Historical Landmarks, CRHR, NRHP, California State Historic Resources Inventory, and historic maps Neenach (1943) and Willow Springs (1943).

The records search did not identify any cultural resources within the Project site. A single historic archaeological site was identified 0.5 mile west of the Project site. In addition, Tetra Tech noted two potentially historic structures in the Project surroundings—at the corner of West Avenue C and 220th Street West and at Neenach Substation—but did not record or evaluate them. In 2010, CH2M HILL visited the residential structure site and found that the structure had been removed.

Tetra Tech conducted a pedestrian survey of the Western Parcel in 2008, and CH2M HILL conducted a survey of the Eastern Parcel in 2010 (Tetra Tech, 2008a; CH2M HILL, 2010) (Appendix I). Both surveys revealed that the Project site has been highly disturbed from agricultural activity. The surveys failed to locate cultural resources of any kind.

The archaeological sensitivity of the Project site was found to be low. This finding is based on the negative survey results of both Tetra Tech and CH2M HILL, the high degree of ground disturbance from agricultural activities, and the lack of any previously recorded cultural resource sites within 0.5 mile of the Project site.

In addition, a search of the Native American Heritage Commission's (NAHC's) Sacred Lands File was conducted with negative results. The NAHC forwarded a list of Native American groups and/or individuals that may have knowledge of cultural resources in the Project area. Tetra Tech sent a letter to each of these parties requesting information about such properties, but no responses were received.

Paleontological Resources

A literature and museum repository search of Project site paleontological resources and surroundings was performed as part of a CEC AFC by Tetra Tech (Tetra Tech, 2008b). The search included published and unpublished paleontological and geological literature; geologic maps (Diblee, 1963; Wiese, 1950); and archives at the University of California Museum of Paleontology in Berkeley, California, and at the

San Bernardino County Museum in Redlands, California. Although the review identified paleontological sites throughout the western Mojave Desert and the Tehachapi Mountains, it revealed no known sites within the Project site or its immediate vicinity. Archival research also revealed no known unique geologic features within the Project site (Tetra Tech, 2008c).

A paleontological field reconnaissance survey was conducted at the Western Parcel by William Orr, Ph.D., and by Sheila Alfsen of Paleontology Associates from March 26 to March 28, 2008 (Tetra Tech, 2008b). During the field inspection, surveys were conducted within the area of potential effect for paleontological resources where natural exposures exist in the alluvium. The survey included inspection of visible ground surface and stratigraphy, sample collection for micro-vertebrates, and followup lab work. Examination exposures and landforms verified details of the geologic mapping in the area.

No salvageable fossils were recorded during the survey. However, findings of mammalian bone fragments, wood pieces, and leaf cuticles reflect the possibility of significant finds during construction, depending on the depth of excavation.

Tetra Tech concluded that the Project site surface layer is likely to be a zone of low paleontological sensitivity to a depth of approximately 6 feet. However, sediment deeper than 6 feet has the potential to contain areas of high paleontological sensitivity as evidenced by the presence of fossil materials observed in nearby areas.

Impact Discussion

Impacts related to cultural and paleontological resources have been analyzed using significance criteria derived from the County of Los Angeles Initial Study Checklist and the CEQA Appendix G checklist. Taking into consideration the significance criteria of both checklists (which are nearly identical), the Project could have a potentially significant effect if one or more of the following were to occur:

a. Is the project site in or near an area containing known archaeological resources or containing features (drainage course, spring, knoll, rock outcroppings, or oak trees) that indicate potential archaeological sensitivity?

The Project site does not contain features that may indicate potential archaeological sensitivity, such as rock outcroppings, knolls, oak trees, or springs. The Project site is not located in or near an area containing known archaeological resources. No cultural resources were identified at the Project site through archival records searches, including CHRIS files, California Points of Historical Interest, California Historical Landmarks, CRHR, NRHP, California State Historic Resources Inventory, and historic maps for Neenach (1943) and Willow Springs (1943). Therefore, there would be no impact.

b. Does the project site contain rock formations indicating potential paleontological resources?

No known unique geologic resources or features exist on the Project site. Literature and archival searches indicate that, although known paleontological sites exist throughout the western Mojave Desert and the Tehachapi Mountains, no known sites exist within the Project site or its immediate vicinity. A field survey conducted by William Orr, Ph.D., and Sheila Alfsen of Paleontology Associates from March 26 to March 28, 2008 (Tetra Tech, 2008b) indicates that the upper 6 feet of sediment underlying the Project site is of low paleontological sensitivity; however, areas of high sensitivity may exist at depths greater than 6 feet. Given that Project components should not extend below 6 feet in depth, and with mitigation incorporated, impacts would be less than significant.

c. Does the project site contain known historic structures or sites?

Review of historical records and pedestrian surveys revealed no historic structures or sites within Project boundaries. Historical records review included CHRIS files, California Points of Historical Interest, California Historical Landmarks, CRHR, NRHP, California State Historic Resources Inventory, and historic maps for Neenach (1943) and Willow Springs (1943). There would be no impact.

d. Would the project cause a substantial adverse change in the significance of a historical or archaeological resource as defined in 15064.5?

The sensitivity for cultural resources in this area is considered to be low, because no cultural resources were identified on the Project site through archaeological records searches, historical records searches, or pedestrian surveys. In addition, the Project site has a high degree of surface disturbance resulting from agricultural use. However, since the Project would require excavation and grading during its construction phase, the potential cannot be ruled out for the discovery of buried cultural resources not detected through surface inventory or through shovel testing. Any potential impacts to the archaeological and historical resources can be made less than significant with proposed mitigation.

e. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

The Project would not directly or indirectly destroy a unique paleontological resource or site or unique geological feature. No unique geological features exist on the site. Site surveys and paleontological records searches indicate that, although the upper 6 feet of sediment underlying the Project site is of low paleontological sensitivity, areas of high sensitivity may exist at depths greater than 6 feet. It is unlikely that construction activities will extend below a depth of 6 feet. Recommendations of the Project geotechnical engineer will be incorporated into final design plans; however, based on the preliminary assessment, the deepest ground-disturbing construction activities would be approximately 6 feet. As such, the Project would not impact potential sensitive paleontological resources below a depth of 6 feet. Proposed mitigation measures would reduce potential impacts to paleontological resources to less than significant levels.

f. Disturb any human remains, including those interred outside of formal cemeteries?

The Project is not likely to cause a substantial adverse change in the significance of a historical or archaeological resource as defined in ‘15064.5, nor is the Project likely to disturb human remains, including those interred outside of formal cemeteries. The sensitivity for cultural resources in this area is considered to be low, because no cultural resources were identified on the Project site through archaeological records searches, historical records searches, or pedestrian surveys. In addition, the Project site has a high degree of surface disturbance resulting from agricultural use. However, since the Project would require excavation and grading during its construction phase, the potential cannot be ruled out for the discovery of buried cultural resources not detected through surface inventory or through shovel testing. Any potential impacts to the archaeological and historical resources can be made less than significant with proposed mitigation.

<u>Mitigation and Residual Impact</u>

Potential impacts related to archaeological and historical resources would be mitigated to an insignificant level: (1) through compliance with applicable codes, standards, and ordinances; (2) by preparing and implementing a final geotechnical report containing site-specific recommendations for the Project; and (3) by implementing the following mitigation measures:

CULTURAL-1. If cultural resources or materials are discovered during ground-disturbing activities, work near the discovery should cease and the area should be protected until the find can be evaluated

by a qualified archaeologist. Depending on the nature of the find, additional consultation with the SHPO or with Tribal leaders may be necessary before work can resume in the area of the find.

CULTURAL-2. If human remains are encountered, according to State Health and Safety Code Section 7050, no further disturbance will occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the remains are determined to be Native American, the County Coroner will notify the NAHC, who will determine and notify a most likely descendant (MLD). The MLD may inspect the site of the discovery with the permission of the landowner or his or her authorized representative. The MLD will complete inspection within 48 hours of notification by the NAHC. The MLD may then recommend scientific removal and analysis of human remains and any items associated with Native American burials.

CULTURAL-3. Prior to construction, the Applicant will retain a qualified paleontologist to design and implement a mitigation program where excavations deeper than 6 feet would occur.

CULTURAL-4. Prior to ground disturbance, all construction personnel will be given awareness training, which will include instruction in both verbal and written forms that cultural or paleontological resources may be encountered during construction.

Based on implementation of the above mitigation measures, the potential impacts associated with archaeological and historical resources would be reduced to a less than significant level.

Cumulative Impact

The Project has a low potential to affect cultural resources and a moderate potential to contribute to the loss of paleontological resources if Project features extend 6 feet below grade (which is not anticipated). Any contribution to cumulative impacts of either cultural or paleontological resources would be rendered less than cumulatively considerable through mitigation measures. The cumulative impact that will result from the combination of the Project's incremental impact and the effects of other projects listed in Appendix A and shown on Figure CUMULATIVE-1, the Project would not result in an incremental increase in cultural resource impacts to other projects.

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **archaeological, historical**, or **paleontological** resources?

☐ Potentially significant ☒ Less than significant with project mitigation ☐ Less than significant/ No impact

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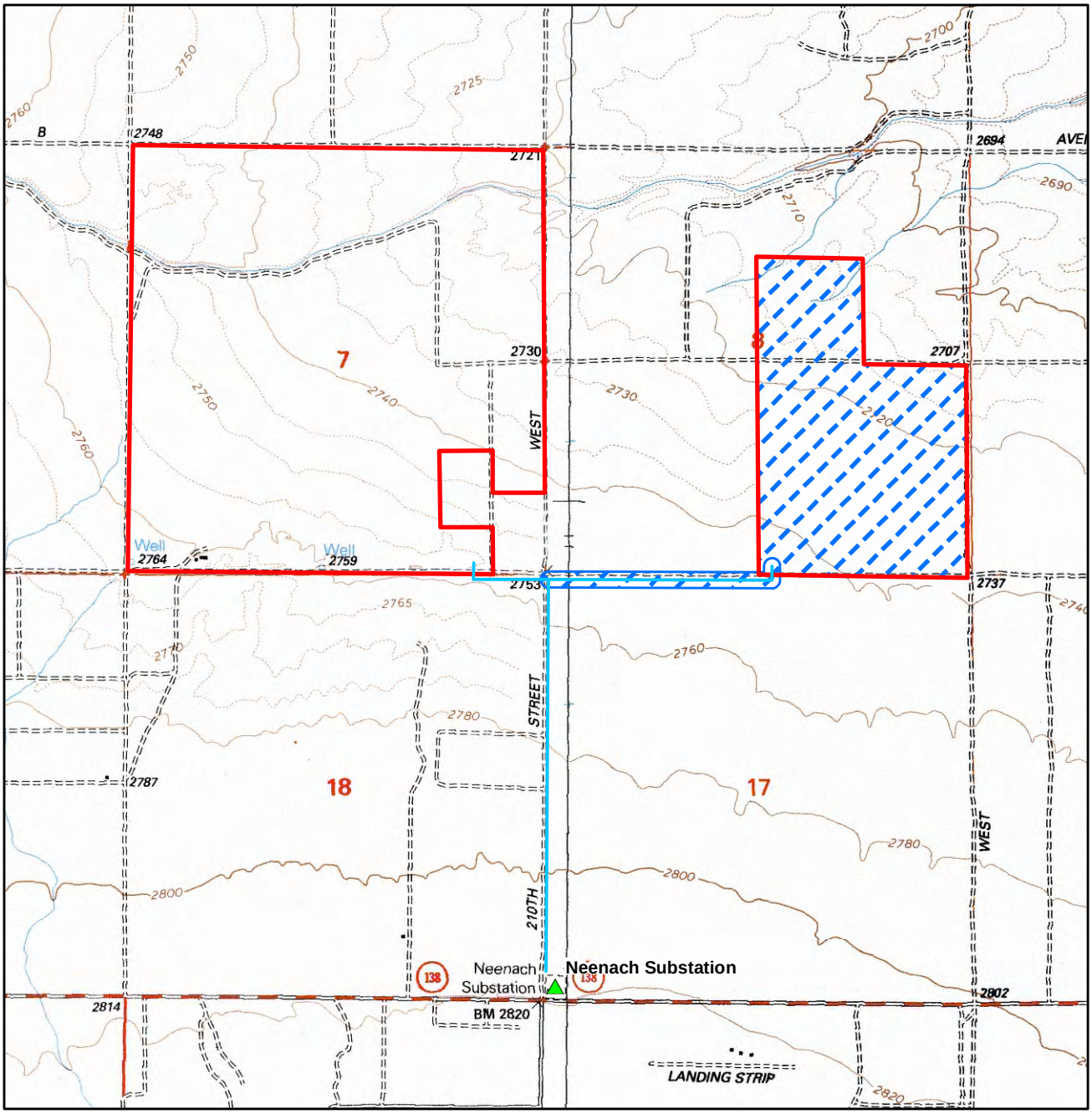

LEGEND

- Substation
- Proposed Gen-tie Route (66 kV)
- Project Site
- Cultural Survey Area

VICINITY MAP

N

0 1,000 2,000

Feet

FIGURE CULTURAL-1
Cultural Survey Area
Alpine Solar Project
July 2010

RESOURCES - 5. MINERAL RESOURCES

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?
b.	☐	☒	☐	Would the project result in the loss of availability of a locally important mineral resource discovery site delineated on a local general plan, specific plan or other land use plan?
c.	☐	☒	☐	Other factors?

☐ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design

Regulatory Setting

This section provides an overview of state and local regulations related to mineral resources issues applicable to the Project.

State

Under the Surface Mining and Reclamation Act of 1975 (SMARA), the CGS identifies deposits of regionally significant aggregate resources to protect such resources in areas subject to urban expansion or other irreversible land use changes that would preclude mineral extraction.

Local

Construction and operation of the Project is subject to policies contained within the County of Los Angeles General Plan and the Antelope Valley Areawide General Plan of 1986. (Together these documents form a coordinated statement of public policy for the area.)

Environmental Setting

The Project site is located in the western portion of the Antelope Valley, a depressed basin in the western Mojave Desert composed of Quaternary alluvial deposits that extend several thousand feet in depth. Based on the findings of GeoSoils Consultants, Inc., 2008, the Project site is underlain by Quaternary alluvium. The upper 5 feet of the site reportedly consisted of brown, silty, fine sands and gray-brown, sandy silts that are moist and loose to soft. Similar, but moderately dense to dense, materials were encountered greater than 5 feet below grade to the maximum depth explored during the geotechnical evaluation (51.5 feet below grade) (GeoSoils Consultants, Inc., 2008).

Impact Discussion

Impacts related to mineral resources have been analyzed using significance criteria derived from the County of Los Angeles Initial Study Checklist and the CEQA Appendix G checklist. Taking into consideration the significance criteria of both checklists (which are nearly identical), the Project could have a potentially significant effect if one or more of the following were to occur:

a. Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

The 2009 Los Angeles County Department of Regional Planning Antelope Valley Area Plan Update Background Report (Los Angeles County Department of Regional Planning, 2009) includes a CGS SMARA Mineral Resource Zones map, which includes the Antelope Valley and surrounding areas. The Project area is not identified within a mineral resource zone on this map. There would be no impact.

b. Would the project result in the loss of availability of a locally important mineral resource discovery site delineated on a local general plan, specific plan or other land use plan?

The current project area is not identified within a mineral resource zone within the County of Los Angeles General Plan (both current and draft versions) or within the Antelope Valley Areawide General Plan. The applicable general plans also do not identify the Project area as containing a locally important mineral resources recovery area. There would be no impact.

Mitigation and Residual Impact

None proposed.

Cumulative Impact

There are no cumulative impacts related to mineral resources anticipated given that the project will not occur within an area of known mineral resources. The Project's incremental effect is not cumulatively considerable, and the Project's cumulative effect is therefore not significant.

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **mineral** resources?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/ No impact

References

GeoSoils Consultants, Inc. 2008. Geologic and Geotechnical Engineering Report, Proposed Alta Vista Solar Power Plant, Northwest Corner of 210th and Avenue C, Los Angeles County, California. August.

Los Angeles County Department of Regional Planning. 2009. The Los Angeles County Department of Regional Planning Antelope Valley Area Plan Update Background Report (Map 3-1). April. http://planning.lacounty.gov/tnc

Los Angeles County Department of Regional Planning. 2008. County of Los Angeles General Plan, Natural Resource Areas, Los Angeles County Department of Regional Planning. http://planning.lacounty.gov/view/general_plan_maps

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RESOURCES - 6. AGRICULTURE AND FORESTRY RESOURCES

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☒	☐	☐	Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency to non-agricultural use?
b.	☐	☒	☐	Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?
c.	☐	☒	☐	Would the project involve other changes in the existing environment that due to their location or nature, could result in conversion of Farmland, to non-agricultural use?
d.	☐	☒	☐	Other factors? 1. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))? (CEQA Checklist, II. Agriculture and Forestry Resources. c.) 2. Result in the loss of forest land or conversion of forest land to non-forest use? (CEQA Checklist, II. Agriculture and Forestry Resources. d.)

☐ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design

<u>Regulatory Setting</u>

This section provides an overview of state and local regulations related to agricultural issues applicable to the Project.

Federal

No applicable agriculture-related federal laws, regulations, or statutes were identified pertaining to the Project.

State

California Department of Conservation Farmland Mapping and Monitoring Program
The California Department of Conservation (CDOC) administers the Farmland Mapping and Monitoring Program (FMMP), which was established in 1982 to continue the Important Farmland mapping efforts begun in 1975 by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS). The FMMP provides data to help plan current and future use of California's agricultural land resources and applies the NRCS soil classifications to identify agricultural lands and designations. The CDOC has a minimum mapping unit of 10 acres; parcels smaller than 10 acres are absorbed into the surrounding classifications.

Government Code Section 51200 et seq., California Land Conservation Act (Williamson Act)
The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space uses in return for reduced property tax assessments. Private land within locally designated agricultural preserve areas is eligible for enrollment under Williamson Act contracts.

Local

Los Angeles County General Plan
No applicable agricultural policies, goals, or implementation measures were identified in the Los Angeles County General Plan that are pertinent to the Project.

Antelope Valley Areawide General Plan
Policy Statement 28. Within designated "Agricultural Opportunity Areas," carefully evaluate extension of urban and suburban uses (outside the urban areas and the rural communities) for its impact on adjacent agricultural operations.

Policy Statement 142. Encourage the continued production of existing agricultural lands within the Antelope Valley.

Environmental Setting

The Project surroundings are typical of the western Antelope Valley and are characterized by farmland, rural residences, and undeveloped lands. Farmland in the Project area includes designated Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance (CDC, 2008) (see Figure AG-1). These designations are described as follows:

Prime Farmland: Farmland with the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date.

Farmland of Statewide Importance: Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date.

Unique Farmland: Farmland of lesser-quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the 4 years prior to the mapping date.

Farmland of Local Importance: Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.

The acreages and percentages of each of the farmland designations are listed in Tables AG-1 and AG-2 for Los Angeles County and the Antelope Valley west of the Lancaster-Palmdale area, respectively.

TABLE AG-1
Designated Farmland in Los Angeles County

Type	Total Acres	Percent of Total Farmland	Farmland on Project Site (acres)	Percent of Farmland on Project Site
Prime Farmland	32,408	77%	522	2%
Farmland of Statewide Importance	1,228	3%	0	0%
Unique Farmland	1,178	3%	0	0%
Farmland of Local Importance	7,193	17%	0	0%
Total Designated Farmland	42,007	100%	522	2%
Source: California Department of Conservation, Farmland Mapping and Monitoring Program, Table A-13, 2008.				

TABLE AG-2
Designated Farmland in the Antelope Valley West of Lancaster-Palmdale Area

Type	Total Acres	Percent of Total Farmland	Farmland on Project Site (acres)	Percent of Farmland on Project Site
Prime Farmland	19,190	66%	522	3%
Farmland of Statewide Importance	2,489	9%	0	0%
Unique Farmland	331	1%	0	0%
Farmland of Local Importance	6,916	24%	0	0%
Total Designated Farmland	28,928	100%	522	3%
Source: California Department of Conservation, Farmland Mapping and Monitoring Program, 2008.				

Agricultural productivity in the Antelope Valley Planning Area has been historically and is currently limited by water costs and climatic conditions. Agricultural uses in the Planning Area are grazing lands, alfalfa, carrots, orchards for stone fruits, and vineyards (County of Los Angeles, 2010b).

Currently, the Los Angeles County Farm Bureau, which is a non-profit organization dedicated to the support and preservation of agriculture throughout Los Angeles County, has identified major farming issues that may limit the overall potential of growth in the agriculture industry. These issues pertain to water availability, provisions to allow for agricultural burns (benefits farming efforts), environmental protection, and groundwater quality (AVSREIR, 2010).

The Project site consists of former agricultural fields that have been recolonized by weedy vegetation (see the Biota Section), and undeveloped areas. The Project site contains 522.2 acres of Prime Farmland: 371.4 acres of Prime Farmland in the Western Parcel, and 150.8 acres of Prime Farmland in the Eastern Parcel (see Figure AG-2) (CDC, 2008). The Project site does not contain Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance. Pursuant to the Antelope Valley Areawide General Plan of the Los Angeles County General Plan, the Project site is designated Non Urban (N1) and is an Agricultural Opportunity Area (County of Los Angeles, 1986). Pursuant to Los Angeles County Code 22.24, the Project site is zoned Heavy Agriculture (A-2-5) (see Figure LAND-1) (County of Los Angeles, 2010a).

Most of the lands immediately adjacent to the Project site are former cropland that has been recolonized by Mojave Desert vegetation, most notably rabbit brush. The exceptions to this are (1) farmlands of Local Importance adjacent to 0.25 mile of the northwestern part of the Western Parcel and adjacent to approximately 0.33 mile of the northern border of the Western Parcel; (2) a square mile of Prime Farmland located diagonally across from the northwestern corner of the Western Parcel; and (3) land designated as Joshua Tree Woodland SEA adjacent to the eastern side of the Eastern Parcel and 0.25 mile south of the Western Parcel.

The proposed generation-tie line corridor is designated as grazing land by the CDC (CDC, 2008). Pursuant to the Antelope Valley Areawide General Plan, the generation-tie corridor is designated N1 (County of Los Angeles, 1986). Pursuant to Los Angeles County Code 22.24, the generation-tie line corridor along Avenue C is zoned Heavy Agriculture (A-2-5); south of Avenue C, it is zoned Light Agriculture (A-1-2) (see Figure LAND-1) (County of Los Angeles, 2010a).

Impact Discussion

Impacts related to agricultural resources have been analyzed using significance criteria derived from the County of Los Angeles Initial Study Checklist and the CEQA Appendix G checklist. Taking into consideration the significance criteria of both checklists (which are nearly identical), the Project could have a potentially significant effect if one or more of the following were to occur:

a. Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

The Project would not permanently convert Prime Farmland to a non-agricultural use. The Project would, during the life of the Project, temporarily convert 522 acres of Prime Farmland to nonagricultural use. After the 30-year expected life of the Project, the land could be returned to an agricultural use. The Los Angeles County General Plan's policy (County of Los Angeles, 2008) is to protect agricultural uses from encroaching on urban and suburban development and to limit development on agricultural land (Policy C/OS 6.2; C/OS 6.3). The Antelope Valley Areawide General Plan (County of Los Angeles, 1986) policy is to encourage the continued production of existing agricultural lands within the Antelope Valley (LU 14). In Agricultural Opportunity Areas, the policy is to carefully evaluate the extension of urban and suburban uses (outside the urban areas and the rural communities) for its impact on adjacent agricultural operations (LU 28).

Although the Project would temporarily diminish agricultural resources, the amount of farmland temporarily converted by the Project would be relatively small. Currently, 19,190 acres of Prime Farmland exists in the Antelope Valley west of the Lancaster-Palmdale area (see Figure AG-1) (CDC, 2008). The Prime Farmland at the Project site represents 3 percent of Prime Farmland within this portion of Antelope Valley and 2 percent of Prime Farmland within Los Angeles County. The designated farmlands at the Project site represent 2 percent of state-designated farmlands within this Los Angeles County and 3 percent

within the Antelope Valley (including Prime Farmlands, Farmlands of Statewide Importance, Unique Farmlands, and Farmlands of Local Importance). Therefore, impacts would be less than significant.

b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?

Pursuant to Los Angeles County Code, the Project site is zoned Heavy Agriculture (A-2-5). Electrical power generating plants are permitted in A-2 zones with a conditional use permit. The Project generation-tie line would cross land zoned Light Agriculture (A-1-2) (see Figure LAND-1). Allowable land uses within this zone include utility facilities, including transmission lines and poles. The Project access roads would also cross land zoned Light Agriculture (A-1-2). Improvement of county roads for Project access is also consistent with the zoning code.

The Project site does not contain Williamson Act contract lands (County of Los Angeles, 2008). Therefore, impacts would be less than significant.

c. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?

The Project is proposed on 800 acres of land. The associated gen-tie and collector line would be located adjacent to planned County roads. No other Project facilities would be located outside of the designated site. The solar PV facility would require one to two permanent employees and would not cause growth-inducing impacts. As such, the Project would not result in conversion of Farmland to non-agricultural use, other than as already noted. Impacts would be less than significant.

d. 1. Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

And

2. Result in the loss of forest land or conversion of forest land to non-forest use

The Project would not conflict with existing zoning or cause the rezoning of forest land or timberland, nor would it result in the loss of forest land. Project lands do not consist of forest lands as defined in Public Resources Code Section 12220(g) nor timberland as defined by Government Code section 51104(g). Project lands also are not zoned as forest land or Timberland Production. Therefore, there would be no impact.

Mitigation and Residual Impact

None proposed.

Cumulative Impact

The Project's incremental effect on agricultural resources would not be cumulatively considerable, and the Project's cumulative effect is therefore not significant. The Project is located in a region with agricultural uses; however, the Antelope Valley has been historically and is currently limited by water availability, water costs, and climatic conditions. The Project would result in the temporary conversion of 522 acres of Prime Farmland. This amount is considered less than significant. The Project would also result in the temporary conversion of 800 acres of former agricultural land to renewable energy production, thereby precluding possible agricultural production for the planned life of the Project (30 years). The Project would be expected to contribute to the overall trend of conversion of agricultural lands to other uses in the Antelope Valley when considered together with other potential cumulative projects listed in Appendix A and shown on Figure CUMULATIVE-1. However, as a result of the minor loss of Farmland, the Project's incremental contribution to cumulative agricultural impacts is considered less than significant.

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **agriculture** resources?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/ No impact

References

California Department of Conservation (CDC). 2008. Farmland Mapping and Monitoring Program. http://www.conservation.ca.gov/DLRP/FMMP/Pages/Index.aspx

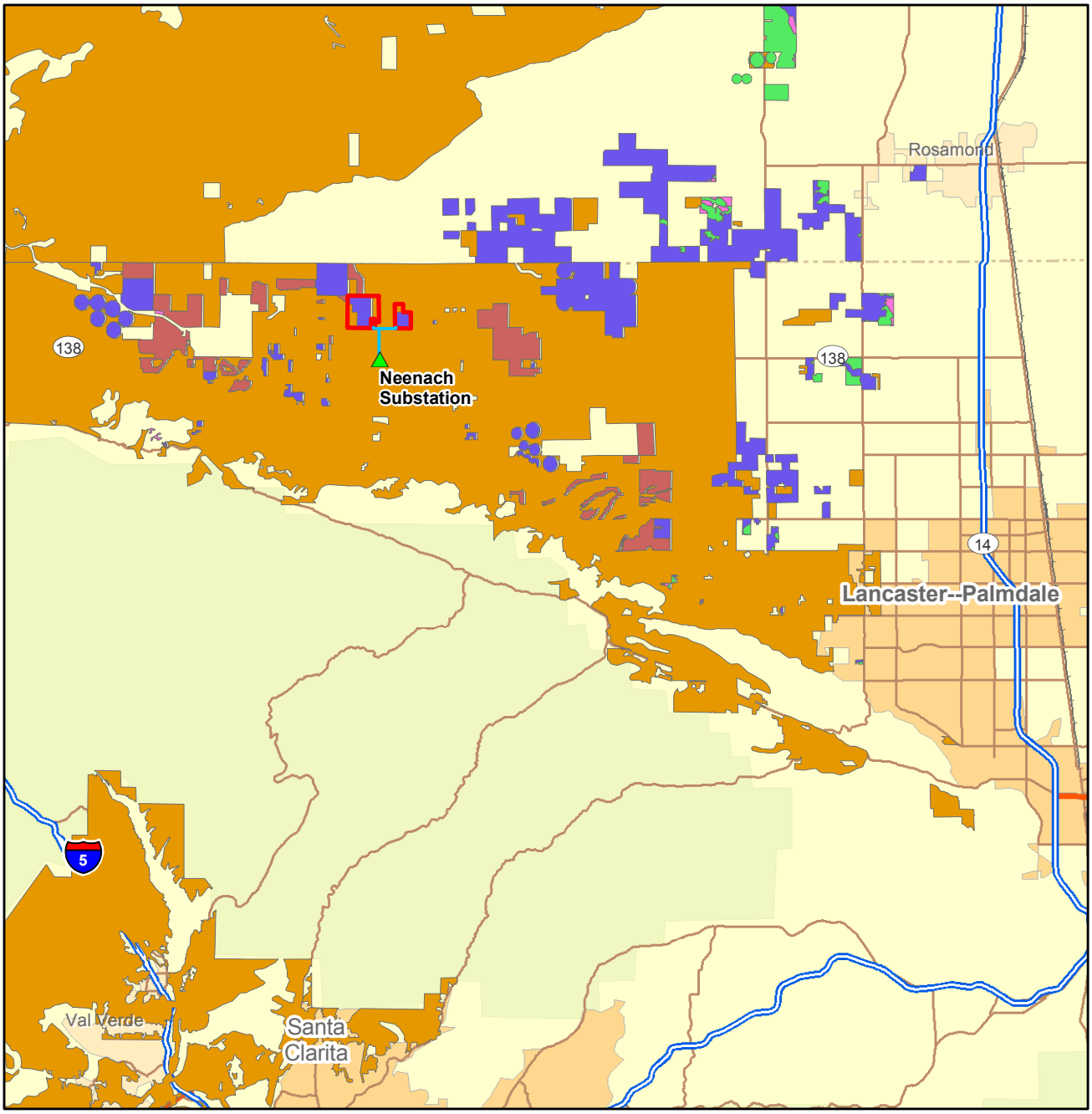
County of Los Angeles. 1986. Antelope Valley Areawide General Plan-A Component of the Los Angeles County General Plan. Adopted by the Board of Supervisors, 1986. http://planning.lacounty.gov/view/antelope_valley_area_plan/

County of Los Angeles. 2010a. Zoning Ordinance Summary. http://search.municode.com/html/16274/index.htm

County of Los Angeles. 2010b. Preliminary Draft of the Antelope Valley Area Plan Update. http://planning.lacounty.gov/tnc

County of Los Angeles. 2010. Draft Environmental Impact Report, AV Solar Ranch One Project (AVSREIR). June.

County of Los Angeles. 2008. County of Los Angeles Draft General Plan. http://planning.lacounty.gov/generalplan#gp-existing



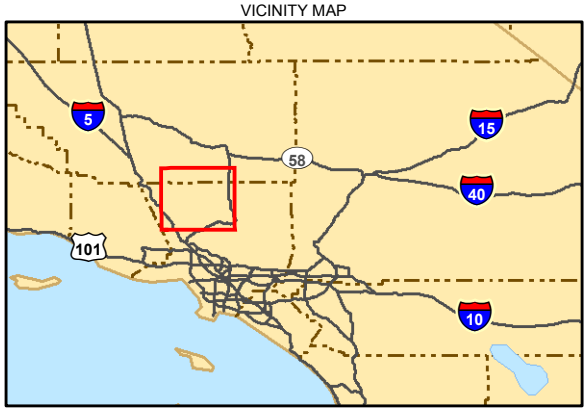
LEGEND

- Existing Substation
- Proposed Gen-tie Route (66 kV)
- Project Site

Farmland Designations

- Farmlands of Statewide Importance
- Prime Farmland
- Unique Farmland
- Farmland of Local Importance
- Grazing Lands

VICINITY MAP



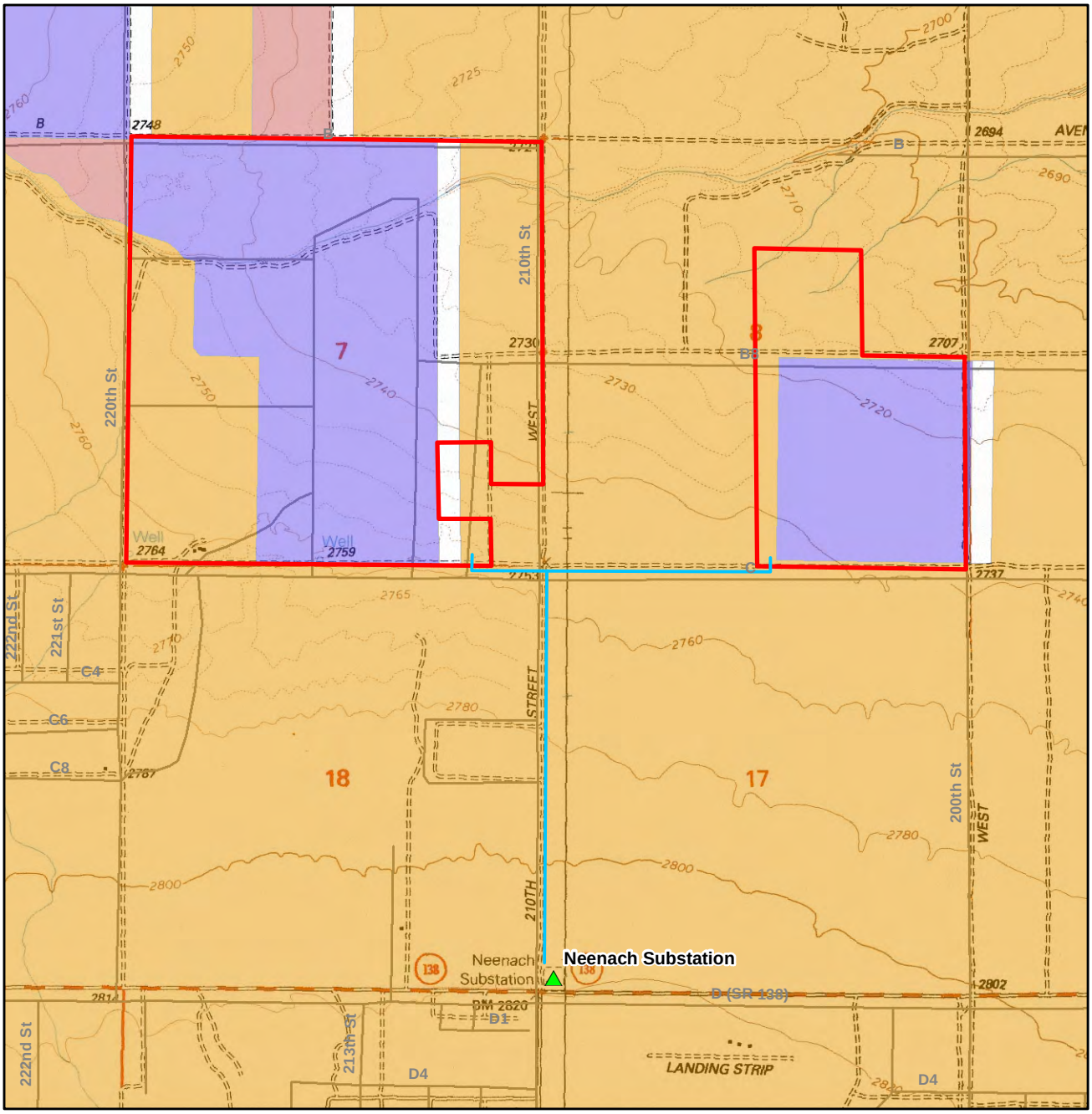
N

0 2.5 5

Miles

FIGURE AG-1

Farmland Mapping – Antelope Valley
Alpine Solar Project
July 2010



LEGEND

- Existing Substation
- Proposed Gen-tie Route (66 kV)
- Project Site

Farmland Designations

- Farmlands of Statewide Importance
- Prime Farmland
- Unique Farmland
- Farmland of Local Importance
- Grazing Lands

VICINITY MAP

N

0 1,000 2,000

Feet

FIGURE AG-2
Farmland Mapping - Project Site
Alpine Solar Project
July 2010

RESOURCES - 7. VISUAL QUALITIES/AESTHETICS

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Is the project site substantially visible from or will it obstruct views along a scenic highway (as shown on the Scenic Highway Element), or is it located within a scenic corridor or will it otherwise impact the viewshed?
b.	☐	☒	☐	Is the project substantially visible from or will it obstruct views from a regional riding or hiking trail?
c.	☐	☒	☐	Is the project site located in an undeveloped or undisturbed area that contains unique aesthetic features?
d.	☐	☒	☐	Is the proposed use out-of-character in comparison to adjacent uses because of height, bulk, or other features?
e.	☐	☒	☐	Is the project likely to create substantial sun shadow, light or glare problems?
f.	☐	☒	☐	Other factors (e.g., grading or landform alteration)? 1. Have a substantial adverse effect on a scenic vista? (CEQA Checklist, I. Aesthetics. a). 2. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? (CEQA Checklist, I. Aesthetics. b). 3. Substantially degrade the existing visual character or quality of the site and its surroundings? (CEQA Checklist, I. Aesthetics. c). 4. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? (CEQA Checklist, I. Aesthetics. d).

☐ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design ☒ Visual Report ☐ Compatible Use

Regulatory Setting

This section provides an overview of state and local regulations related to visual/aesthetic resources issues applicable to the Project.

Federal

No applicable agriculture-related federal laws, regulations, or statutes were identified pertaining to the Project.

State

California State Parks and Recreation

The California Department of Parks and Recreation manages a number of public parks within the County of Los Angeles pursuant to the Department's strategic plan. Two California State Parks are near the Project site: the Antelope Valley California Poppy Reserve (AVCPR) and the Arthur B. Ripley Desert Woodland State Park (Desert Woodland Park).

Local

Los Angeles County General Plan

The Goals and Policies Element of the Los Angeles County General Plan identifies several visual-related policies to guide the future development within unincorporated Los Angeles County.

Environmental Setting

The Project is located in the Antelope Valley, the westernmost portion of the Mojave Desert, which is characterized by an expansive arid landscape and long-distance views. The Antelope Valley is a triangular-shaped basin with the San Gabriel Mountains to the south and southwest and the Tehachapi Mountains to the north and northwest. The Project site is on the relatively rural western end of the Antelope Valley that consists primarily of rural residences, farmlands, and undeveloped areas. The site is approximately 3 miles east of the rural community of Neenach, which has about 800 residents (Los Angeles County, 2010).

Current land use at the Project site includes cropland, former cropland that has been recolonized by shrubby vegetation, and undeveloped areas. The majority of lands immediately adjacent to the Project site are fields that were croplands but have been recolonized by Mojave Desert vegetation, most notably rabbit brush. The exceptions to this are active farmlands adjacent to the northwestern corner of the Western Parcel and a SEA adjacent to the eastern side of the Eastern Parcel and 0.25 mile south of the Western Parcel. SEAs are ecologically important systems often integral to the preservation of threatened or endangered species and the conservation of biological diversity in the County. The Project is adjacent to a portion of SEA #60, the Joshua Tree Woodland SEA system. These SEA parcels are densely vegetated and block views from the adjacent roadways.

In addition to the Project, a gen-tie line is proposed along 210th Street West between the Project site and the SCE Neenach Substation on SR 138. The existing 210th Street West is a dirt road that passes adjacent to former cropland and a portion of the Joshua Tree Woodland SEA. Other transmission lines exist near the Project, including a wood pole line along the northern side of SR 138.

Recreational facilities in the Project vicinity include regional, state, and national parks and trails such as the Antelope Valley California Poppy Reserve (Poppy Reserve), Arthur B. Ripley Desert Woodland State Park, Los Angeles County Desert Pines Wildlife Sanctuary, and the Pacific Crest National Scenic Trail (PCT). No neighborhood parks are near the Project.

The Poppy Reserve is located on the Antelope Buttes approximately 7 miles southeast of the Project site. The Poppy Reserve is open year round but attracts most visitors from mid-February through mid-May for its wildflower displays. The Poppy Reserve has several miles of trails, an interpretive center, and five designated vista points.

The 560-acre Arthur B. Ripley Desert Woodland State Park is located 2 miles south of the Project site. The Arthur B. Ripley Park offers visitors a self-guided interpretive trail in Joshua tree habitat. In the

spring, the park also offers wildflower displays. Los Angeles County Desert Pines Wildlife Sanctuary, approximately 4 miles south of the Project site, is also open to the public but has no established trails.

The PCT is a hiking trail that crosses the Antelope Valley near the Project site. The PCT is a national trail that traverses the west coast of the United States from Canada to Mexico, crossing California, Oregon, and Washington. The PCT descends from the Tehachapi Mountain Range north-northeast of the Project site, crosses the Antelope Valley, and ascends into the San Gabriel Mountain Range southwest of the Project site. At its closest points, the PCT is approximately 6 miles south, 4 miles east, and 3.5 miles north of the Project site.

No State-designated, State-eligible, County-designated, or County-eligible scenic highways have views of the Project area.

Impact Discussion

Impacts related to visual/aesthetic resources have been analyzed using significance criteria derived from the County of Los Angeles Initial Study Checklist and the CEQA Appendix G checklist. Taking into consideration the significance criteria of both checklists (which are nearly identical), the Project is considered to have a potentially significant effect if one or more of the following were to occur:

Los Angeles County Initial Study

a. Is the project site substantially visible from or will it obstruct views along a scenic highway (as shown on the Scenic Highway Element), or is it located within a scenic corridor or will it otherwise impact the viewshed?

The Project would not impact views from a scenic highway or scenic corridor. The Project is not located within view of a State Scenic Highway. The Project is not located within view of a County scenic highway or corridor, including designated or eligible County Official Scenic Highways or other County scenic corridors, ridgelines, or hillsides (Los Angeles County, 2008).

b. Is the project substantially visible from a regional riding or hiking trail?

As discussed in the Visual Technical Report (Appendix J), Project features would be visible from portions of the PCT a minimum of 3.6 miles north of the Project site. However, the features would not have a substantially adverse effect on scenic vistas from these points.

As discussed in the Visual Technical Report, the Project would be visible from limited portions of the Poppy Reserve, which contains hiking trails. However, the Project would not be substantially visible because of the 7-mile distance and low profile of most Project features.

As discussed in the Visual Technical Report, the Project would not be visible from trails within the Arthur B. Ripley Desert Woodland State Park because of screening by vegetation.

The Project would not be substantially visible from other riding or hiking trails in the Project vicinity.

c. Is the project site located in an undeveloped or undisturbed area that contains unique aesthetic features?

The Project is not located in an undeveloped or undisturbed area that contains unique aesthetic features. Project surroundings are typical of the western Antelope Valley. The Project is located in an area that has been primarily used for agriculture. Land use at the Project site includes active or temporarily fallow cropland, former cropland that has been recolonized by shrubby vegetation, and undeveloped areas. Land adjacent to the Project site is primarily former cropland that is currently undeveloped or used for grazing. Parcels of undisturbed land exist in the Project surroundings that are designated by Los Angeles County as a Joshua Tree Woodland SEA. Portions of the SEA are located one-quarter mile south of the

Western Parcel and adjacent to the eastern side of the Eastern Parcel. However, the Project site is completely outside the SEA boundaries.

d. Is the proposed use out-of-character in comparison to adjacent uses because of height, bulk, or other features?

Project features would not be out of character with adjacent uses because of height, bulk, or other features. As discussed in Section 2.1 of the Visual Technical Report (Appendix J), Project solar modules and support structures will be a maximum of 8 feet tall, which is somewhat shorter than existing trees and buildings near the Project. The structures that carry the proposed transmission line would be approximately 70 feet in height, which is similar to the height of existing transmission structures located along SR 138. The O&M building would be 15 feet tall and 450 square feet, which would make it somewhat smaller than the existing one- and two-story buildings near the Project.

Publicly accessible points from which the Project would be visible, including roadways and trails, are a minimum of 1 mile from the Project site. Although adjacent lands are mostly current or former cropland that contains few structures, and although Project features have a comparatively large footprint, from a distance the solar structures have a relatively low profile and are arrayed in rows that mimic the form of row crops in the area. Their height and dark color visually relate to dark stands of trees in adjacent Joshua Tree Woodland SEA parcels.

e. Is the project likely to create substantial sun shadow, light or glare problems?

Because of the low stature of the majority of Project features, the Project is not likely to cause sun shadow problems.

As discussed in question f.4. below, the Project is not likely to create light or glare problems.

f. Other factors (e.g., grading or landform alteration)?

The Project would not require grading or landform alteration that would create substantial visual impacts. As is discussed in the Visual Technical Report (Appendix J), the solar modules would require a moderately flat surface for installation and some earthwork, including grading, fill, compaction, and erosion control. However, because the Project site is former cropland that is already relatively flat, grading and landform alteration activities would likely be relatively minor from a visual perspective and would not be substantially visible offsite.

f.1. Would the project have a substantial adverse effect on a scenic vista?

The Project would not have a substantial adverse effect on a scenic vista. In the Project vicinity, publicly accessible locations that provide a scenic vista include the Poppy Reserve, the PCT, Arthur B. Ripley Desert Woodland State Park, and Los Angeles County Desert Pines Wildlife Sanctuary. As discussed in Section 4.2.2 and Section 4.3 of the Visual Technical Report (Appendix J), the Project would not be visible from within the Arthur B. Ripley Desert Woodland State Park or the Los Angeles County Desert Pines Wildlife Sanctuary because of the screening effects of vegetation within the parks.

The Project would not have a substantially adverse effect on views from the Poppy Reserve. As shown on Figure 2 Photo B and discussed in Section 5.1.1 of the Visual Technical Report (Appendix J), the Project would be visible from the Poppy Reserve but would not be very noticeable because of the 7-mile distance and the low profile of Project features. From this distance, Project structures would not be distinguishable as solar infrastructure and would blend in with other features on the valley floor such as the adjacent fields and stands of trees. Project features may be noticeable but would not be visible enough from the Poppy Reserve to attract the attention of the casual observer.

Project features would be visible from portions of the PCT north of the Project site but would not have a substantially adverse effect. As is shown on Figure 7 Photo B and discussed in Section 5.1.6 of the Visual Technical Report (Appendix J), the Project would be a minimum of 3.6 miles from portions of the PCT from which it would be visible. From the PCT, Project features would be seen from above and would appear as two large, dark, geometric forms on the valley floor. Visually, these features would relate to the parcels of undeveloped lands that contain dark stands of trees such as the Joshua Tree Woodland SEA parcels and the Arthur B. Ripley Park. From this distance, Project features are not readily distinguishable as solar infrastructure. Because of their low profile, Project features would not block views across the valley.

f.2. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State Scenic Highway?

The Project would not be visible from any State Scenic Highway. The closest Officially Designated State Scenic Highway is located 25 miles to the south in the San Fernando Valley and does not offer views of the Project site. The closest Eligible State Scenic Highways are Segments of SR 14 and SR 58, which are a minimum of 25 miles northeast of the Project site and do not offer views of the Project site.

f.3. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

The Project would not substantially degrade the visual character of the site and its surroundings. As is discussed in Section 5.1 of the Visual Technical Report in the analyses of the Project's impacts on the Key Observation Points (KOPs), the presence of the Project would somewhat alter the character of the views from publicly accessible areas in the Project vicinity. This is because solar infrastructure is a new feature in a landscape that is primarily farmland and undeveloped land. However, the change in character would not rise to the level of substantial degradation because the Project features are low and do not block views across the valley. Most of these views are relatively distant, because the Project is set back one mile from the nearest public roadway. In addition, the form of the Project features relates visually to existing agricultural land uses because rows of solar panels mimic the form of row crops in the area. The geometric and linear forms of the Project footprint and features are similar to the geometric and linear forms of existing elements such as roads, parcel boundaries, lines of trees planted as windbreaks, and existing transmission lines.

The Project also would not substantially degrade the existing visual quality of the site and its surroundings. As discussed in Section 5.1 of the Visual Technical Report, the visual quality in the view from KOPs 1, 4, and 5 would remain substantially the same. From KOPs 2, 3, and 6, the visual quality would be reduced from moderately high to moderate when Project features are in place. These adverse visual impacts do not constitute a substantial or significant change in visual character or quality.

f.4. Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

The Project would not create a substantial new source of glare. Glare is a phenomenon that exists when there is too high a degree of contrast between bright and dark areas in a field of view which makes it difficult for the human eye to adjust to differences in brightness. For example, glare could be created if the filament of an unshielded light were visible at close range in an otherwise dark setting. The Illuminating Engineering Society of North America Outdoor Environment Lighting Committee (IENSA) defines glare as "the sensation produced by luminance in the visual field that is sufficiently greater than the luminance to which the eye has adapted to cause annoyance, discomfort, or loss of visual performance and visibility" (IENSA, 1999 p.46). The IESNA defines three categories of glare:

- *Disability glare*–the effect of stray light on the eye whereby visibility and visual performance are reduced. A direct glare source that produces discomfort may also produce disability glare by introducing a measurable amount of stray light to the eye.
- *Discomfort glare*–glare producing discomfort that does not necessarily interfere with visual performance or visibility.
- *Nuisance glare*–glare that causes complaints.

Photovoltaic collector panels are designed to absorb as much of the sun's energy as possible, and the glass panes that protect the surfaces of the collectors are usually made of a specially formulated glass that permits 90 percent of the light to reach the collectors and reflect only 10 percent of the light that fall on them. As a consequence, solar collector panels are not as reflective as normal glass surfaces. An additional factor to consider in evaluating the effect of any reflectivity of light off the panels is that because the energy of light decreases at a rate that is the square of the distance, the energy of any light reflecting off of the collectors will fall off very rapidly with increasing distance. As is discussed in Section 3.2.2 of Appendix J, the simulations were rendered to indicate their appearance at times when reflectivity would be the highest. Substantial glare would not be experienced at the Poppy Reserve because it is approximately 7 miles away from the Project site (see Section 5.1.1 of Appendix J). Substantial glare would not be visible from the PCT because the solar modules would be south-facing and their reflective surface would not be visible from the PCT to the north (see Section 5.1.6). The Project site is not visible from the PCT to the south and west because views are blocked by intervening topography, vegetation, and structures. Reflectivity would be visible in the Project vicinity (see Sections 5.1.2 to 5.1.5 of Appendix J) and this reflectivity has the potential to create the illusion that the collector field is a lake during times of the day in which the solar panels are reflective. However, because this reflectivity will be angled upward, and because its intensity will be rapidly attenuated by distance, it will not create substantial levels of glare, which properly speaking, refers to levels of brightness that cause discomfort or interfere with vision.

The Project would not create a substantial new source of nighttime light. Because the Project site is in a relatively rural area, any new project has the potential to create a new source of light. However, the light sources associated with the Project would be minimal and would be restricted to that required for nighttime safety and security. As discussed in Section 2.2 of Appendix J, during the construction phase, work would generally occur during daylight hours eliminating the need for substantial night lighting. As is discussed in Section 2.3 of Appendix J, during the operation phase, lighting would be designed to provide the minimum illumination needed for safety and security and would be shielded to minimize light spillover to surrounding areas.

Mitigation and Residual Impact

None proposed.

Cumulative Impact

AV Solar Ranch One (see cumulative projects list in Appendix A and Figure CUMULATIVE-1) is a proposed 230-MW solar PV project 2 miles east of the Project site along SR 138. However, though motorists on SR 138 would see both projects in rapid succession, they would not be visible at the same time. Motorists traveling west would not see the Project until they pass AV Solar Ranch One, because west of 190th Street any views of the Project site are blocked by topography and a Joshua Tree Woodland SEA parcel (see Figure PROJECT-1). Motorists traveling east would first see the Project site but would not see AV Solar Ranch One until they had driven past the Project site and passed 190th Street. This is because the view would be blocked by a Joshua Tree Woodland SEA and other vegetation. Although both the AV Solar Ranch facility and the Alpine Solar Project would be visible from the PCT, the impact

would not be significant. Therefore, the cumulative impact that will result from the combination of the Project's incremental impact and the effects of other projects is not significant.

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **scenic** qualities?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/ No impact

References

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RESOURCES - 8. GREENHOUSE GAS EMISSIONS

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Would the project generate greenhouse gas (GhGs) emissions, either directly or indirectly, that may have a significant impact on the environment (i.e., on global climate change)? Normally, the significance of the impacts of a project's GhG emissions should be evaluated as a cumulative impact rather than a project-specific impact.
b.	☐	☒	☐	Would the project conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases including regulations implementing AB 32 of 2006, General Plan policies and implementing actions for GhG emission reduction, and the Los Angeles Regional Climate Action Plan?
c.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design

<u>Regulatory Setting</u>

This section provides an overview of state and local regulations related to greenhouse gas emissions applicable to the Project.

Federal

SF6 Emission Reduction Partnership

The EPA has established a voluntary industry program aimed at reducing greenhouse gas emissions. The Partnership's primary objective is to reduce sulfur hexafluoride (SF6) emissions via cost-effective technologies and practices. Through improvements in the leak rate of new equipment, refurbishing of older equipment, and the use of more efficient operation and maintenance techniques, utilities often find economical solutions to reduce SF6 emissions.

State

California Global Warming Solutions Act of 2006 (AB 32)
In 2006, the Legislature passed and Governor Schwarzenegger signed AB 32, the Global Warming Solutions Act of 2006, which set the 2020 greenhouse gas emissions reduction goal into law. It directed the California Air Resources Board (ARB or Board) to begin developing discrete early actions to reduce greenhouse gases while also preparing a scoping plan to identify how best to reach the 2020 limit. The reduction measures to meet the 2020 target are to be adopted by the start of 2011 (http://www.arb.ca.gov/cc/ab32/ab32.htm 2010).

Local

There are no local policies in effect related to greenhouse gas emissions.

Impact Discussion

Impacts related to greenhouse gas emissions have been analyzed using significance criteria derived from the County of Los Angeles Initial Study Checklist and the CEQA Appendix G checklist. Taking into consideration the significance criteria of both checklists (which are nearly identical), the Project could have a potentially significant effect if one or more of the following were to occur:

a. *Would the project generate greenhouse gas (GhGs) emissions, either directly or indirectly, that may have a significant impact on the environment (i.e., on global climate change)? Normally, the significance of the impacts of a project's GhG emissions should be evaluated as a cumulative impact rather than a project-specific impact.*

   And

b. *Would the project conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases including regulations implementing AB 32 of 2006, General Plan policies and implementing actions for GhG emission reduction, and the Los Angeles Regional Climate Action Plan?*

The Project would generate clean, renewable electricity using sunlight energy. The Project would help preserve petroleum resources, reduce greenhouse gas emissions, and would generate substantially less combustion emissions compared to conventional natural gas-fire power plants. However, circuit breakers on the Project site would contain sulfur hexafluoride (SF6). SF6 is a highly potent greenhouse, most commonly used as an electrical insulator in high voltage equipment that transmits and distributes electricity. Since the 1950s, the U.S. electric power industry has used SF6 widely in circuit breakers, gas-insulated substations, and other switchgear used in transmission systems. Several factors affect SF6 emissions from electric power systems, such as the type and age of the SF6-containing equipment (e.g., older circuit breakers can contain up to 2,000 pounds of SF6, while modern breakers usually contain less than 100 pounds), and the handling and maintenance procedures practiced by electric utilities.

On June 21, 2007, as part of the California Global Warming Solutions Act of 2006 (AB 32) the California Air Resources Board (CARB) approved the reduction of SF6 emissions from electricity transmission and distribution equipment as an early action measure. Accordingly, CARB staff, in collaboration with interested stakeholders, is developing a control measure to address these emissions. In the interim, proposed regulatory language has been prepared by the CARB but is not in effect (http://www.arb.ca.gov/cc/sf6elec/sf6elec.htm 2010).

Additionally, the EPA has established the SF6 Emission Reduction Partnership, a voluntary industry program aimed at reducing greenhouse gas emissions. The Partnership's primary objective is to reduce SF6 emissions via cost-effective technologies and practices. Through improvements in the leak rate of

new equipment, refurbishing of older equipment, and the use of more efficient operation and maintenance techniques, utilities often find economical solutions to reduce SF6 emissions.

The Antelope Valley Air Quality Management District and Los Angeles County do not currently have any pending or existing regulations pertaining to SF6.

The overall net benefit from reducing greenhouse gas emissions through solar PV technology reduces potential impacts to less than significant.

Mitigation and Residual Impact

None proposed.

Cumulative Impact

The Project's incremental effect is not cumulatively considerable, and the Project's cumulative effect is positive in that greenhouse gas emissions will be reduced.

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **scenic** qualities?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/ No impact

References

California Air Resources Board Website. http://www.arb.ca.gov/cc/ab32/ab32.htm. 2010.

California Air Resources Board Website. http://www.arb.ca.gov/cc/sf6elec/sf6elec.htm. 2010.

SERVICES - 1. TRAFFIC/ACCESS

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Does the project contain 25 dwelling units or more and is it located in an area with known congestion problems (roadway or intersections)?
b.	☐	☒	☐	Will the project result in any hazardous traffic conditions?
c.	☐	☒	☐	Will the project result in parking problems with a subsequent impact on traffic conditions?
d.	☐	☒	☐	Will inadequate access during an emergency (other than fire hazards) result in problems for emergency vehicles or residents/employees in the area?
e.	☐	☒	☐	Will the congestion management program (CMP) Transportation Impact Analysis thresholds of 50 peak hour vehicles added by project traffic to a CMP highway system intersection or 150 peak hour trips added by project traffic to a mainline freeway link be exceeded?
f.	☐	☒	☐	Would the project conflict with adopted policies, plans, or program supporting alternative transportation (e.g., bus, turnouts, bicycle racks) or otherwise decrease the performance or safety of such facilities?
g.	☐	☒	☐	Other factors? 1. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? (CEQA Appendix G, XVI. Transportation/Traffic. a). 2. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways? (CEQA Appendix G, XVI. Transportation/ Traffic. b). 3. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks? (CEQA Appendix G, XVI. Transportation/Traffic. c). 4. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? (CEQA Appendix G, XVI. Transportation/Traffic. d).

☒ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☒ Project Design

Regulatory Setting

This section provides an overview of state and local regulations related to traffic/access issues applicable to the Project.

Title 49, Code of Federal Regulations, Parts 171–177
Defines the types of materials that are considered hazardous and governs the transportation of hazardous materials and the marking of the transportation vehicles. The administering agencies for the above regulation are the California Highway Patrol (CHP) and the United States Department of Transportation (USDOT).

Title 14, Code of Federal Regulations, Section 77.13(2)(i)
Requires an applicant to notify the FAA of construction of structures with (1) a height greater than 200 feet from grade or (2) greater than an imaginary surface extending outward and upward at a slope of 10 to 1 from the nearest point of the nearest runway of an airport with at least one runway more than 3,200 feet in length.

The administering agency for the above regulation is the FAA. There are no existing airport land uses within the immediate vicinity of the Project. Therefore, notification to the FAA would not be required.

State

California Vehicle Code, Sections 2500–2505
Authorizes the Commissioner of Highway Patrol to issue licenses for the transportation of hazardous materials.

California Vehicle Code, Sections 31303–31309
Requires that the transportation of hazardous materials be on the state or interstate highway that offers the shortest overall transit time possible. The administering agency for the above statutes is the CHP.

California Vehicle Code, Section 35550
Imposes weight guidelines and restrictions upon vehicles traveling upon freeways and highways. The section holds that “a single axle load shall not exceed 20,000 pounds. The load on any one wheel or wheels supporting one end of an axle is limited to 10,500 pounds. The front steering axle load is limited to 12,500 pounds.” Furthermore, CVC Section 35551 defines the maximum overall gross weight as 80,000 pounds and adds that “the gross weight of each set of tandem axles shall not exceed 34,000 pounds.” The administering agency for the above statute is the California Department of Transportation (Caltrans).

California Vehicle Code, Section 35780
Requires a Single-Trip Transportation Permit to transport oversized or excessive loads over state highways. The permit can be acquired through Caltrans.

The California Streets and Highways Code, Sections 660, 670, 672, 1450, 1460, 1470, 1480 et seq
This code defines highways and encroachments and requires encroachment permits for projects involving excavation in State Highways and County Roadways. This law is generally enforced at the local level. The administering agencies for this regulation are Caltrans, the LACDPW, and the Kern County Resource

Management Agency, Roads Department. The Project would need to apply for encroachment permits for any excavation in state and county roadways prior to construction.

California Health and Safety Code, Section 25160 et seq
This code addresses the safe transport of hazardous waste, requires a manifest for hazardous waste shipments, and requires a person who transports hazardous waste in a vehicle to have in their possession a valid registration issued by the Department of Toxic Substances Control (DTSC) while transporting hazardous waste.

California Manual on Uniform Traffic Control Devices (Ca MUTCD) Section 5-1.1
Requires a temporary traffic control plan be provided for "continuity of function (movement of traffic, pedestrians, bicyclists, transit operations), and access to property/utilities" during any time the normal function of a roadway is suspended. For the Project, the administering agencies for the above regulation are the LACDPW and the Kern County Resources Management Agency, Roads Department. If required, the Applicant would file a Traffic Control Plan prior to starting construction. The Traffic Control Plan would be designed to allow for continued function of the roadway network, allowing the flow of vehicles and other forms of traffic movement expected throughout the area to experience minimal interruptions in travel. Traffic Control Plans must be designed by a Professional Engineer and, if deemed necessary, by a Traffic Engineer. The plans must be approved by the local jurisdiction prior to implementation of the Project's construction phase.

Local

Los Angeles County General Plan Transportation Element
Key roadways in Los Angeles County serve as vital transportation corridors within the Antelope Valley. The Transportation Element sets the direction for developing a comprehensive, coordinated, and continuing transportation system for Los Angeles County.

Environmental Setting

The traffic analysis study area includes the Project's immediate vicinity and the surrounding local and regional circulation system. These areas could be affected by traffic generated by the Project during construction and operation. The Project site is located on SR 138 between I-5 on the west and SR 14 on the east. Figure TRAFFIC-1 shows the roadways in the region. A description of the existing transportation system and existing Levels of Service (LOS) is provided below.

North-South Facilities

I-5. This is a major north-south interstate freeway through Los Angeles County and runs the length of California, extending from San Diego County toward the states of Oregon and Washington. I-5 is located 20 miles west of the Project site and provides four mainline lanes in each direction with wide shoulders and a center median.

SR 14. The Antelope Valley (AV) Freeway, or SR 14, is a north-south regional roadway approximately 20 miles east of the Project site. SR 14 provides regional access from the cities of Lancaster and Palmdale and from unincorporated areas within the Antelope Valley. Near the Project site, the freeway generally provides two lanes in each direction, widening to three lanes in each direction with high occupancy vehicle (HOV) lanes to the south toward I-5. Full ramp access is provided at the SR 14 and SR 138 interchange.

SR 138. This is a two-lane, east-west roadway that provides access to the Project site via 210th Street West and 220th Street West. Full ramp access is provided at both the I-5 and SR 14 interchanges. Caltrans has tentative plans to expand SR 138, subject to funding, final design, and environmental review/ approvals. As required by Los Angeles County, consistent with the Caltrans Project Study Report

(dated March 23, 2009) for SR 138 between I-5 and SR 14, and consistent with County roadway width requirements, the AV Solar Ranch One project will be required to dedicate land adjacent to the AV Solar Ranch One project site to provide a total right-of-way width of 200 feet. The dedicated land would be approximately 3 miles east of the Alpine Solar Project site.

210th Street West. This is a north-south local roadway providing primary access to the Project site off SR 138. This street is currently a dirt road.

220th Street West. This is a north-south local roadway that provides access to the Project site. This street is paved with one lane running in each direction.

***Level of Service Descriptions*.** LOS is an indicator of operating conditions on a roadway or at an intersection. It is defined in categories from A to F, with A representing the best traffic flow conditions and F representing poor conditions. LOS A indicates free-flowing traffic; LOS F indicates substantial congestion with stop-and-go traffic and long delays at intersections. Los Angeles County seeks to maintain LOS C or D at intersections during peak hours. Caltrans considers LOS C to LOS D acceptable to the extent feasible.

Traffic counts, per Caltrans' most recent data, are approximately 67,000 vehicles per day on I-5 near the SR 138 interchange; 35,000 vehicles per day on SR 14 near the SR 138 interchange; and 13,000 vehicles per day on SR 138 near the Project site (http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2008all.htm). Both 210th Street West and 220th Street West are operating at acceptable LOS.

Impact Discussion

Impacts related to transportation and traffic have been analyzed using significance criteria derived from the County of Los Angeles Initial Study Checklist and the CEQA Appendix G checklist. Taking into consideration the significance criteria of both checklists (which are nearly identical), the Project could have a potentially significant effect if one or more of the following were to occur:

a. Does the project contain 25 dwelling units or more and is it located in an area with known congestion problems (roadway or intersections)?

The Project proposes to construct a 92-MW solar PV generating facility and includes no residential components. The Project is not located in an area with known congestion problems. There would be no impact.

b. Will the project result in any hazardous traffic conditions?

The Project would not result in any hazardous traffic conditions, including hazardous design features such as sharp curves or dangerous intersections. Construction traffic would present temporary conflicts for motorists in the area as the equipment merges onto roadways, especially onto SR 138. Standard procedures involving the use of flag persons or signs would control the flow of traffic, thereby minimizing potential impacts. As noted in the Caltrans comment letter dated September 15, 2010 (refer to Appendix M), work within State highways would require an encroachment permit and use of oversized-transport vehicles would require a transportation permit. Additionally, mitigation measure TRAFFIC-1 would require implementation of a Construction Traffic Control Plan to reduce potential conflicts between construction traffic and motorists. Operations would require one to two staff per day, which would add a negligible amount of traffic to local roadways. Project access would be provided by a new private road within and adjacent to the existing 210th Street West road alignment, designed in accordance with Fire Department and Department of Public Works requirements (refer to Appendix M for the Fire Department comment letter). Therefore, impacts would be less than significant with mitigation.

c. Will the project result in parking problems with a subsequent impact on traffic conditions?

The Project will not result in parking problems. The Project will contribute approximately 40 peak-hour vehicle trips during construction and approximately 2 peak-hour vehicle trips during operation. Ample parking is available on the Project site for both construction trips and operations trips. No impact would occur.

d. Will inadequate access during an emergency (other than fire hazards) result in problems for emergency vehicles or residents/employees in the area?

No roadways would be closed to through traffic during Project construction. Emergency vehicles, residents, and employees would be able to pass through the area without obstruction. Operations would require one to two employees, resulting in negligible traffic that could restrict access during an emergency. There would be no impact.

e. Will the congestion management program (CMP) Transportation Impact Analysis thresholds of 50 peak hour vehicles added by project traffic to a CMP highway system intersection or 150 peak hour trips added by project traffic to a mainline freeway link be exceeded?

The CMP thresholds will not be exceeded. The Project will contribute approximately 40 peak-hour vehicle trips during construction and approximately 2 peak-hour vehicle trips during operation. There would be no impact.

f. Would the project conflict with adopted policies, plans, or program supporting alternative transportation (e.g., bus, turnouts, bicycle racks) or otherwise decrease the performance or safety of such facilities?

The Project is located in a rural area of Los Angeles County where alternative transportation facilities are not available. There would be no impact.

g.1. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Vehicle trips generated by the Project would be limited to approximately 240 commuting construction workers. Because most workers would be expected to drive to the site alone, 240 additional trips would occur in both the a.m. and p.m. peak periods. Trips associated with the Project would be limited to the construction period of approximately 12 to 18 months.

Workers are expected to commute from Lancaster/Palmdale, Victorville/Apple Valley, the San Fernando Valley, and Bakersfield. The majority of these trips will be in the off-peak direction. Workers are expected to use the I-5 and SR 14 freeways and then SR 138 to access the site. Traffic counts, per Caltrans' most recent data (http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2008all.htm), are approximately 67,000 vehicles per day on I-5 near the SR 138 interchange; 35,000 vehicles per day on SR 14 near the SR 138 interchange; and 13,000 vehicles per day on SR 138 near the Project site.

An increase of approximately 240 commuter roundtrips per day onto area roadways would result in a small percentage increase in total traffic. With a conservative assumption of all worker traffic on the three affected major roadways, the increase in traffic would be 0.4 percent on I-5, 0.7 percent on SR 14, and 2 percent on SR 138. The highest percentage increase in traffic is on SR 138. However, the volume/ capacity ratio of SR 138 is approximately 0.12 (based on an assumed capacity of 13,000 vehicles per day,

per direction). Even with the additional worker traffic, the volume/capacity ratio would remain 0.12, which is equivalent to LOS A. Impacts associated with the construction-related traffic would be less than significant with implementation of mitigation measure TRAFFIC-1.

Facility operations will generate minimal traffic. One to two staff members will be onsite daily, resulting in one to two vehicles per day and vehicles appearing periodically for maintenance. There would be no impact.

g.2. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

The Project would generate approximately 240 roundtrips per day during construction and approximately 2 trips per day during operation. The volume of traffic added to local roadways and intersections is a small percentage and is not expected to change LOS. Given the low number of construction trips and the negligible number of operations trips, the Project would not conflict with standards established by Metro, the Congestion Management Agency for Los Angeles County. No impact would occur.

g.3. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?

The General William J. Fox Airfield is located approximately 14 miles east of the Project site; the Rosamond Skypark is located approximately 15 miles northeast of the Project site; and Edwards AFB is located approximately 20 miles east of the Project site. The Project would not include any buildings or operations that would change air traffic patterns, including either an increase in traffic levels or a change in location that could result in substantial safety risks. PV modules that would be used at the Project site are generally low-reflective and would not pose a hazard to general aviation pilots. No impact on air traffic patterns would occur.

g.4. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Please refer to b.

g.5. Result in inadequate emergency access?

Please refer to d.

g.6. Conflict with adopted polices, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

Refer to f.

Mitigation and Residual Impact

Potential impacts related to traffic would be mitigated to an insignificant level: (1) through compliance with applicable codes, standards, and ordinances; (2) by preparing and implementing a final geotechnical report containing site-specific recommendations for the Project; and (3) by implementing the following mitigation measures:

TRAFFIC-1. The Project Sponsor will prepare a Construction Traffic Control Plan and submit the Plan to the County and Caltrans for review and approval prior to starting construction. The Plan will include flagging, safety measures, signage, and other related measures to protect the traveling public and construction workforce.

Based on implementation of the mitigation measure, the potential impacts associated with traffic would be reduced to a less than significant level.

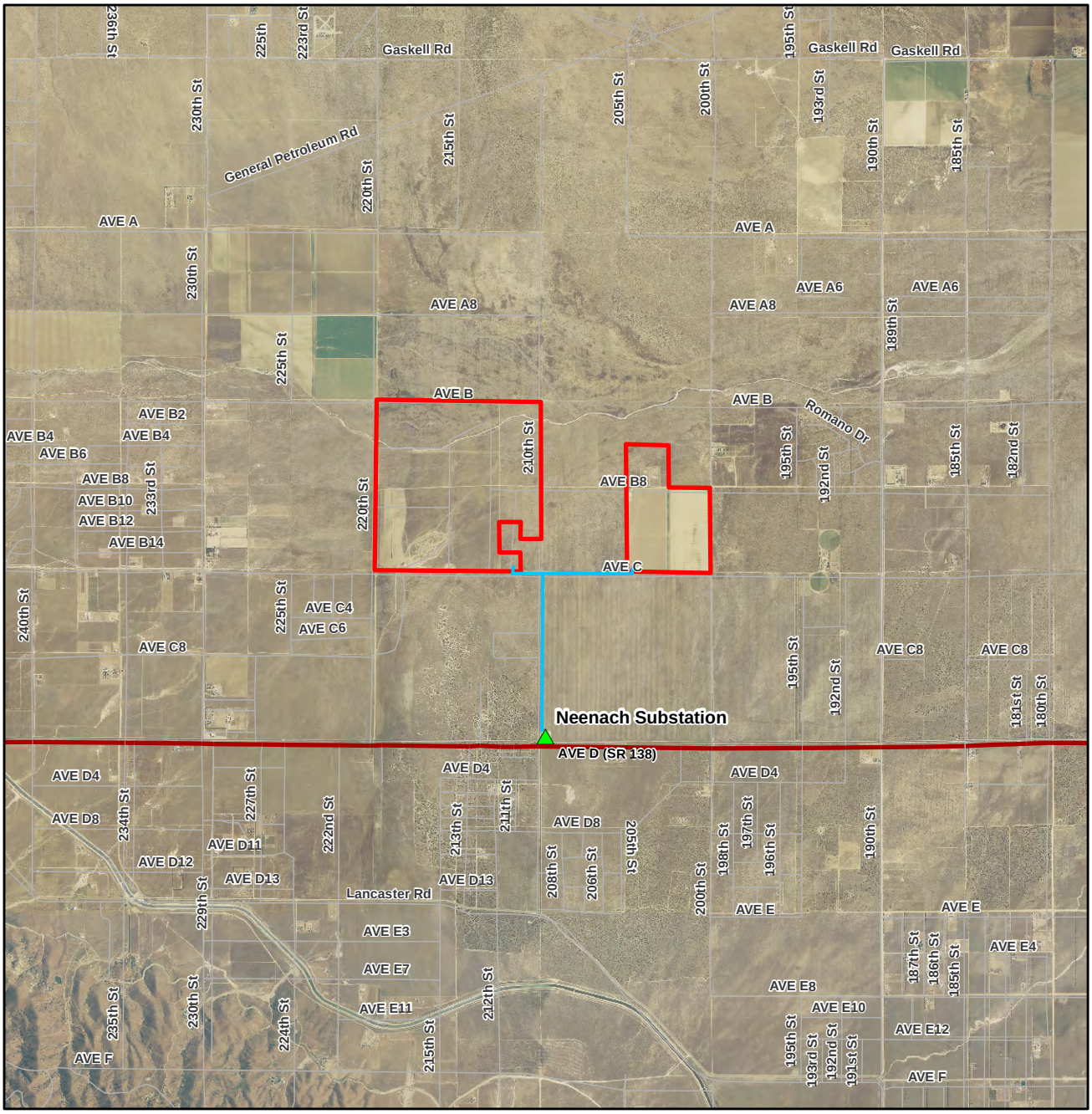
Cumulative Impact

When combined with the impacts of the other potential cumulative projects listed in Appendix A and shown on Figure CUMULATIVE-1, the Project would not result in an incremental increase in traffic impacts. As outlined in the cumulative projects list in Appendix A, the AV Solar Ranch One project may be in construction concurrently with the Alpine Solar Project. Although traffic would increase temporarily on SR 138, the existing volumes on SR 138 are low. The cumulative impact that will result from the combination of the Project's incremental impact and the effects of other projects is not significant.

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **traffic** resources?

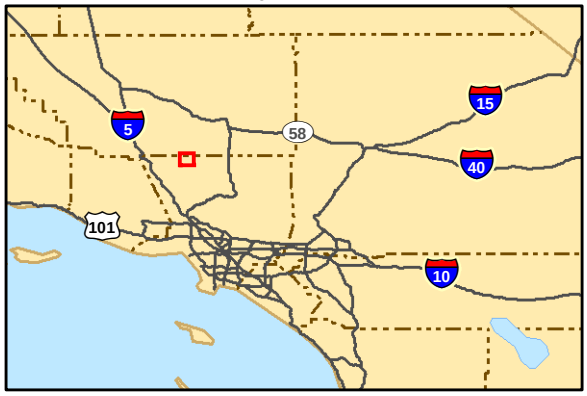
☐ Potentially significant ☒ Less than significant with project mitigation ☐ Less than significant/ No impact



LEGEND

- Substation
- Proposed Gen-tie Route (66 kV)
- Project Site
- Highway
- Local Road

VICINITY MAP



N

0 2,500 5,000

Feet

FIGURE TRAFFIC-1
Project Area Roadways
Alpine Solar Project
July 2010

SERVICES - 2. SEWAGE DISPOSAL

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	If served by a community sewage system, could the project create capacity problems at the treatment plant?
b.	☐	☒	☐	Could the project create capacity problems in the sewer lines serving the project site?
c.	☐	☒	☐	Other factors?

STANDARD CODE REQUIREMENTS

☐ Sanitary Sewers and Industrial Waste – Ordinance No. 6130

☒ Plumbing Code – Ordinance No. 2269

☐ **MITIGATION MEASURES**

☐ Lot Size ☒ Project Design

☐ **OTHER CONSIDERATIONS**

Regulatory Setting

This section provides an overview of state and local regulations related to sewage disposal issues applicable to the Project.

Given that the Project would utilize a private onsite septic system, the primary requirements that apply are the County of Los Angeles Department of Public Health rules and regulations.

Environmental Setting

The Project site is located in a rural and sparsely populated area of the Antelope Valley in the northern portion of Los Angeles County and is not serviced by a public sewer system. No connection to local wastewater treatment facilities exists.

Impact Discussion

Impacts related to sewage disposal have been analyzed using significance criteria derived from the County of Los Angeles Initial Study Checklist. Taking into consideration the significance criteria, the Project is considered to have a potentially significant effect if one or more of the following were to occur:

a. If served by a community sewage system, could the project create capacity problems at the treatment plant?

The Project would be served by a private onsite septic system. The septic system would be designed in accordance with applicable LACDPH requirements (refer to Appendix M for the September 30, 2010 Department of Public Health comment letter). There would be no impact.

b. Could the project create capacity problems in the sewer lines serving the project site?

As noted in a. above, the Project would be served by a private onsite septic system. There would be no impact.

Mitigation and Residual Impact

None proposed.

Cumulative Impact

Because the Project would be served by a private onsite septic system, the Project would have no effect on public sewer services, and therefore contribution to cumulative impacts is considered less than significant. When combined with the impacts of the other potential cumulative projects listed in Appendix A and shown on Figure CUMULATIVE-1, the Project would not result in an incremental increase in public sewer services.

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **sewage** resources?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/ No impact

SERVICES - 3. EDUCATION/LIBRARY

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Could the project create capacity problems at the district level?
b.	☐	☒	☐	Could the project create capacity problems at individual schools that will serve the project site?
c.	☐	☒	☐	Could the project create student transportation problems?
d.	☐	☒	☐	Could the project create substantial library impacts due to increased population and demand?
e.	☐	☐	☐	Other factors?

☐ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

☐ Site Dedication ☐ Government Code Section 65995 ☐ Library Facilities Mitigation Fee

Regulatory Setting

There are no federal or state regulations pertaining to the Project. Local regulations are those relevant to the school districts and libraries.

Environmental Setting

Schools

The Project area is served by the Antelope Valley Union High School District (AVUHSD) and Westside Union School District (WUSD). The AVUHSD includes the Project area and maintains 11 high schools and 1 adult school (AVUHSD, 2010). The WUSD includes the Project area and maintains 12 elementary and middle schools (WUSD, 2010).

The WUSD's educational facility closest to the Project site is the Del Sur Senior Elementary School, located approximately 15 miles southeast. Sundown Elementary School of the WUSD and Desert Winds High School of the AVUHSD are approximately 20 and 26 miles, respectively, southeast of the Project site.

Libraries

The library closest to the Project site is the Lancaster Public Library, located in Lancaster approximately 22 miles southeast of the Project site. Quartz Hill Public Library is located approximately 32 miles southeast of the Project site (Google Earth, 2010).

Impact Discussion

Impacts related to education and library facilities have been analyzed using significance criteria derived from the County of Los Angeles Initial Study Checklist and the CEQA Appendix G checklist. Taking into consideration the significance criteria of both checklists (which are nearly identical), the Project could have a potentially significant effect if one or more of the following were to occur:

a. Create capacity problems at the district level

And

b. Create capacity problems at individual schools that will serve the project site

And

c. Create student transportation problems

And

d. Create substantial library impacts because of increased population and demand

And

e. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or the need for new or physically altered governmental facilities. The construction of these facilities could cause significant environmental impacts in order to maintain acceptable service ratios, response times, or other performance objectives for schools, parks, or other public facilities?

Construction Impacts

The onsite workforce would consist of an average of 200 laborers, electricians, supervisory personnel, support personnel, and construction management personnel (240 maximum). The Project construction workforce is expected to commute to the Project site daily from the communities of Lancaster, Palmdale, Mojave, or Tehachapi. Because the Project would have a relatively short construction period (approximately 12 to18 months), construction workers who may relocate for a short work assignment are not expected to relocate their families. No significant population change is expected during the construction phase; therefore, no influx of families with school-aged children into the area would occur. Significant growth in the communities near the Project site is not expected, so construction of the Project is not expected to have a significant impact on educational facilities, libraries, or parks in the area.

Operational Impacts

One to two full-time staff would be present onsite. Other staff would visit the site only for security, maintenance, or system monitoring visits. No significant population change is expected as a result of the Project's operation; therefore, no influx of families with school-aged children into the area would occur. Operation of the Project is, therefore, expected to have a less than significant local and regional impact on the school districts, individual schools, libraries, and parks.

Mitigation and Residual Impact

None proposed.

Cumulative Impact

When combined with the impacts of the other potential cumulative projects listed in Appendix A and shown on Figure CUMULATIVE-1, the Project would not result in an incremental increase in public facility impacts. Construction workers would be expected to come from nearby communities, and the one to two operations staff required would have a negligible impact on public facilities. Therefore, the Project would not create cumulatively significant impacts.

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **educational** resources?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/ No impact

References

Google Earth, 2010.

SERVICES - 4. FIRE/SHERIFF SERVICES

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Could the project create staffing or response time problems at the fire station or sheriff's substation serving the project site?
b.	☐	☒	☐	Are there any special fire or law enforcement problems associated with the project or the general area?
c.	☐	☒	☐	Other factors? Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection or police protection?

☒ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

☐ Fire Mitigation Fee

Regulatory Setting

Federal

No federal laws, orders, regulations, or standards were identified that are applicable to fire protection services for the Project.

No federal laws, orders, regulations, or standards were identified that are applicable to sheriff services for the Project.

State

FIRE

California Government Code Section 8561 – California Disaster and Civil Defense Master Mutual Aid Agreement

The California Disaster and Civil Defense Master Mutual Aid Agreement is an agreement made and entered into by and between the State of California, various state departments and agencies, and the various political subdivisions, municipal corporations, and other public agencies of the State of California. The purpose of the agreement among the participants is to provide voluntary aid and assistance to each other to cope with different types of disasters, including fires.

SHERIFF

Assembly Bill (AB) 844, as Amended, Berryhill – Amendment to Section 21606
AB 844 was approved on December 1, 2008, and amends the existing State Business and Professions Code Section 21606. The amendments increase junk dealer and recycler operations accountability, and increase penalties for potential purchase of stolen scrap metals and nonferrous materials. This legislation is potentially relevant to the Project during the construction and operational phases related to possible theft of Project construction materials and solar power generation-related materials (e.g., copper wiring, solar panels, electrical equipment, etc.).

California Government Code Section 8561 – California Disaster and Civil Defense Master Mutual Aid Agreement
The California Disaster and Civil Defense Master Mutual Aid Agreement is an agreement made and entered into by and between the State of California, various state departments and agencies, and the various political subdivisions, municipal corporations, and other public agencies of the State of California. The purpose of the agreement among the participants is to provide voluntary aid and assistance to each other to cope with different types of disasters, including law enforcement efforts.

Local

FIRE

Los Angeles County General Plan (1993)
No goals, policies, or objectives directly applicable to fire protection services were identified in the Los Angeles County General Plan.

Antelope Valley Areawide General Plan (1986)
No applicable goals, policies, or objectives were identified in the Antelope Valley Areawide General Plan.

Los Angeles County 2008 Draft General Plan Update – Goal PS-7, Chapter 9
Goal PS-7 is to have a county with reliable and satisfactory fire protection services and facilities. Under this Goal, Policies PS 7.1–7.3 promote land use development in conjunction with fire services, support expansion of fire protection facilities, and encourage ongoing evaluation of fire protection service funding.

Los Angeles County Proposition E Special Tax Measure of 1997
The Special Tax is levied specifically to fund essential fire suppression and emergency medical services. The Special Tax rate is levied according to land use and can be adjusted annually by the County Board of Supervisors.

Los Angeles County Developer Fee Program and Developer Fee Detailed Fire Station Plan
The Developer Fee Program was authorized by the Los Angeles Board of Supervisors in 1990, and functions to generate funds for capital projects necessary to maintain fire protection services within the existing service areas. The Program establishes a reasonable relationship between the developer fees collected and the LACFD Developer Fee Detailed Fire Station Plan, which identifies LACFD plans for acquisition, construction, expansion, improvement, and equipping of fire station facilities.

Environmental Setting

The LACFD serves the Project site from Station No. 112, approximately 14 miles east of the Project site, located at 8812 West Avenue E-8, Lancaster, CA 93536 (CFD, 2010). The response time from this station is approximately 18 minutes. This station is within the North Department Region, Division V,

in Battalion 11. The nearest battalion headquarters is No. 33 at 44947 Date Avenue, Lancaster, CA 93534, approximately 25 miles east of the Project (LFD, 2010) (see Figure FIRE-1).

The Los Angeles County Sheriff's Department (LACSD) provides police protection and public safety services for the County. In the Project area, the Lancaster Patrol Station personnel provide law enforcement services. The Project is located within the Sheriff's Department designated Field Operations Region I that includes the unincorporated areas of the county. The services provided by eight of the Region I patrol stations are basic police services including traffic control, neighborhood policing, emergency services, and crime prevention (http://sheriff.lacounty.gov/wps/portal/lasd, 2010). The County Sheriff would respond to the Project site from the Lancaster patrol station approximately 25 miles southeast of the Project site, at 501 West Lancaster Boulevard, Lancaster, CA 93534 (LACSD, 2010). This substation provides services for over 190,000 residents in over 600 square miles in the northern Los Angeles County unincorporated area. There are approximately 189 sworn personnel and 74 civilian personnel assigned to this station (LACSD, 2010). Response time from this station would be approximately 33 minutes. In some cases, the Palmdale patrol station (approximately 35 miles southeast of the Project site at 750 E. Avenue Q, Palmdale, CA 93550) may respond to emergencies and provide support services to the Lancaster station (LACSD, 2010). The response time from the Palmdale station is approximately 40 minutes.

Impact Discussion

Impacts related to fire and police protection have been analyzed using significance criteria derived from the County of Los Angeles Initial Study Checklist and the CEQA Appendix G checklist. Taking into consideration the significance criteria of both checklists (which are nearly identical), the Project is considered to have a potentially significant effect if one or more of the following were to occur:

a. *Could the project create staffing or response time problems at the fire station or sheriff's substation serving the Project site?*

And

b. *Are any special fire or law enforcement problems associated with the Project or the general area?*

And

c. *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection or police protection?*

Construction Impacts

The onsite workforce would consist of an average of 200 laborers, electricians, supervisory personnel, support personnel, and construction management personnel (maximum 240). Phase I of the construction period (Western Parcel) would last 12 months, followed by a 7-month construction period for Phase II (Eastern Parcel). Because the Project would have a relatively short construction period, construction workers who may relocate for a short work assignment are not expected to relocate their families. Construction of the Project would, therefore, not cause significant population changes in the communities near the Project site, nor would it create a demand for additional housing. Project construction would therefore have a less than significant impact on fire and police protection services and their staffing or response times. Project construction would not require new or physically altered governmental facilities.

Operational Impacts

One to two full-time staff would be present onsite. Other staff would visit the site only for security, maintenance, or system monitoring visits. Therefore, no significant population change is expected as a result of the Project's operation. The Project would, therefore, have a less than significant impact on fire and police protection services.

In addition, the PV modules and ancillary equipment represent a negligible increase in fire potential. Therefore, no increase in police or firefighting staff or increase in demand for police or firefighting services is expected. The Project would not cause significant adverse impacts to the response times of the LACSD or the LACFD. Communication equipment would be available onsite at all times to contact agencies if emergencies arise.

Operation of the Project would include the following Applicant-proposed project features that would increase fire protection and security services or facilities, as detailed below:

- During construction, fire extinguishers would be available onsite and personnel would be trained in their proper use.
- Onsite fire protection systems for Project operation would be provided to limit the potential for injury, loss of life, loss of property, and plant down-time from a fire or an explosion. Fire protection infrastructure would be installed in compliance with LACFD requirements. The applicant would have a fire prevention plan approved pursuant to applicable Los Angeles County regulations. The systems that would be included in the facility would consist of fire water storage tanks, pumping systems, and suppression systems. Site personnel would be trained to effectively deal with emergency situations, and local fire authorities would be provided with the facility layout, material hazards, and evacuation routes.
- An Emergency Response and Waste Contingency Manual would be prepared and updated (and kept within the site's O&M building) to ensure safe and effective firefighting measures onsite during the Project's operation.
- A Weed Abatement Plan would be developed and implemented to prevent excessive growth of combustible natural materials on the Project site during operation.
- Security systems during Project operation would include a chain-link security fence. Each fenced area would include at least two gates, and a secured, controlled main access gate would be located at the entrance of each area. The fence would be equipped with a perimeter detection system to monitor any intrusion into the property.

The LACFD recommends implementation of Land Development Unit standards, as noted in their September 20, 2010 comment letter (refer to Appendix M). Additionally, the Health and Hazardous Materials Division recommended preparation of a Phase I Environmental Site Assessment to address potential soil and groundwater contamination. There have been three ESAs prepared; however, they were not included in the Draft MND. The ESAs have been included as Appendix L to this document. The ESAs determined that no further site assessment, soil mitigation or management strategies are necessary.

Therefore, the Project would have a less than significant impact on emergency fire and police services.

Mitigation and Residual Impact

None proposed. The Project will comply with all appropriate Fire Department Land Development Unit codes, ordinances and requirements according to the content of the comment letter provided by the Fire Department on September 20, 2010 (see Appendix M).

Cumulative Impact

The minimal short-term increase in construction work force and operations work force, when combined with the impacts of the other potential cumulative projects listed in Appendix A and shown on Figure CUMULATIVE-1, would not be expected to exceed available fire and police protection availability. Therefore, the cumulative impact that will result from the combination of the Project's incremental impact and the effects of other projects is not significant.

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **fire/sheriff** resources?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/ No impact

References

County of Los Angeles Fire Department (CFD). Website: http://fire.lacounty.gov/default.asp Accessed July 23, 2010.

City of Lancaster, Fire Department (LFD) Website: http://www.cityoflancasterca.org/index.aspx?page=891. Accessed July 23, 2010.

Los Angeles County Sheriff's Department (LACSD). Website http://sheriff.lacounty.gov/wps/portal/lasd

SERVICES - 5. UTILITIES/OTHER SERVICES

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☐	☒	Is the project site in an area known to have an inadequate public water supply to meet domestic needs or to have an inadequate ground water supply and proposes water wells?
b.	☐	☐	☒	Is the project site in an area known to have an inadequate water supply and/or pressure to meet fire fighting needs?
c.	☐	☒	☐	Could the project create problems with providing utility services, such as electricity, gas, or propane?
d.	☐	☒	☐	Are there any other known service problem areas (e.g., solid waste)?
e.	☐	☒	☐	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services or facilities (e.g., fire protection, police protection, schools, parks, roads)?
f.	☐	☒	☐	Other factors? f.1. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? (CEQA Appendix G, XVII. Utilities and Service Systems. a.) f.2. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? (CEQA Appendix G, XVII. Utilities and Service Systems. b.) f.3. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? (CEQA Appendix G, XVII. Utilities and Service Systems. c.) f.4. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed? (CEQA Appendix G, XVII. Utilities and Service Systems. d.) f.5. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments? (CEQA Appendix G, XVII. Utilities and Service Systems. e.)

f.6. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs? (CEQA Appendix G, XVII. Utilities and Service Systems. f.)

f.7. Comply with federal, state, and local statutes and regulations related to solid waste? (CEQA Appendix G, XVII. Utilities and Service Systems. g.)

STANDARD CODE REQUIREMENTS

☐ Plumbing Code – Ordinance No. 2269

☐ Water Code – Ordinance No. 7834

☐ **MITIGATION MEASURES**

☐ **OTHER CONSIDERATIONS**

☐ Lot Size

☐ Project Design

Regulatory Setting

This section provides an overview of federal, state and local regulations related to utilities/other services issues applicable to the Project.

Federal

No federal laws, orders, regulations, or standards were identified related to utility services for the Project.

State

California Government Code Section 4216 – Underground Utilities

Section 4216 requires that an excavator must contact a regional notification center at least two days prior to excavation of any subsurface installations. The notification center, in turn, would notify the utilities that may have buried lines within 1,000 feet of the excavation, such that safety and avoidance measures may be taken during excavation activities. Representatives of the utilities are required to mark the specific location of their facilities within the work area prior to the start of excavation. The Project would comply with notification and excavation requirements under Government Code Section 4216.

California Public Resources Code Section 40000 et seq – Integrated Waste Management Act of 1989 (AB 939)

AB 939 was passed in response to increased solid waste generation and decreased landfill capacity. It is administered by the California Integrated Waste Management Board (CIWMB), and part of its mandate was a waste diversion goal of 25 percent by the year 1995 and 50 percent by the year 2000 for source counties and cities.

California Solid Waste Reuse and Recycling Access Act of 1991

The Solid Waste Reuse and Recycling Act requires all new developments to include adequate, accessible, and convenient areas for collecting and loading recyclable and green waste materials. This Act was passed to assist local jurisdictions to meet the diversion goals set in AB 939.

Local

Los Angeles County General Plan (1993)
No goals, policies, or objectives directly applicable to utility services were identified in the Los Angeles County General Plan.

Antelope Valley Areawide General Plan (1986)
Water Supply and Distribution Policy 101. Develop and use groundwater sources to their safe yield limits.

Los Angeles County Code
Title 12 Chapter 12.84: Low Impact Development Standards. Chapter 12.84 establishes LID standards for developments constructed after January 1, 2009. LID encourages site sustainability and smart growth in a manner that respects and preserves the characteristics of the County's watersheds, drainage paths, water supplies, and natural resources. The Project meets the applicability criteria in Chapter 12.84 and is designed in compliance with LID standards.

Title 20 Chapter 20.87: Construction and Demolition Debris Recycling and Reuse. Chapter 20.87 requires that at least 50 percent by weight of all soil, rock, gravel, and Project construction and demolition debris removed from a site must be recycled or reused, unless otherwise approved by the Director. The code requires submission of a Recycling and Reuse Plan and associated annual reporting to demonstrate compliance of the required recycling and reuse. The Project meets the applicability criteria in Chapter 20.87 and would comply with the code requirements for construction debris recycling and reuse.

Title 20 Chapter 20.89: Solid Waste Generation Service Charge. The County levies an annual solid waste generation service charge upon each parcel of real property in unincorporated Los Angeles County. The fees collected are furnished in connection with the preparation, adoption, and administration of the Los Angeles County Household Hazardous Waste Element and the Reduction and Recycling Element of the County Integrated Waste Management Plan. The Project would comply with the solid waste generation service charge in accordance with the ordinance.

Title 22 Chapter 22.52: Green Building. On November 18, 2008, the Los Angeles County Board of Supervisors adopted green building development standards for projects constructed after January 1, 2009. The green building ordinance requires that a minimum of 65 percent of non hazardous construction and demolition debris by weight from non-residential buildings with a gross floor area of at least 10,000 square feet will be recycled and/or salvaged for reuse. This standard does not apply to the Project.

Title 32 Fire Code. The Los Angeles County Fire Code adopts the California Fire Code and International Fire Code and provides fire protection design and practice measures, including demonstration of adequate firewater supply that apply to developments in the County.

The Project would be designed and maintained to meet the Los Angeles County Fire Code requirements.

<u>Environmental Setting</u>

Water Supply and Water Treatment Facilities
Regional water supply conditions are discussed above in Resources: 1. Water Quality. There are no water treatment facilities in the project area.

Stormwater Drainage Facilities
No stormwater drainage facilities exist onsite. No natural perennial surface waters exist in the immediate vicinity of the site. A large natural drainage channel is oriented east-west across the northern portion of the Western Parcel and across the northwestern corner of the Eastern Parcel. The Project site is characterized by terrain that is gently sloped to the northeast south of the natural drainage, and to the southeast north of the natural drainage. Elevation ranges from approximately 2,730 to 2,765 feet amsl.

Electricity and Natural Gas
SCE local distribution lines service the Project area. The Project site is approximately 1 mile north of Neenach Substation, which will serve as the Project's interconnection point. Discussion of other energy utilities is not presented here because the Project does not require natural gas or propane.

Solid Waste
In 2007, a total of 1.14 million tons of solid waste was collected in unincorporated Los Angeles County that was disposed into landfills (CIWMB, 2009). Approximately 56 percent of the solid waste stream was diverted from the landfills through a combination of source reduction, recycling, and reuse efforts (Los Angeles County Solid Waste Management Committee, 2009). The solid waste diversion rate in unincorporated Los Angeles County has generally increased since 1995, when the County diverted 27 percent of the solid waste stream. This percentage exceeded the 25 percent diversion goal under AB 939. The County has exceeded the AB 939, 50 percent target diversion rate since 2004; based on preliminary estimates, the County is expected to have achieved a 62 percent diversion rate in 2008 (Los Angeles County Solid Waste Management Committee, 2009).

Los Angeles County has a large and complex waste management system with eight major solid waste landfills (i.e., facilities receiving more than 50,000 tons of solid waste per year), four small solid waste landfills, and two waste-to-energy facilities. Residential, commercial, and industrial solid waste collection is handled by private haulers. Once collected, the trash may be taken to any landfill that is willing to accept the waste. Non-hazardous solid waste generated in Los Angeles County is disposed at Class III landfills, transformation facilities, permitted inert landfills, or out-of-county landfills.

Six permitted Class III landfills and one Class II landfill are located within approximately 75 miles of the Project site. Two major permitted Class I hazardous waste landfills are located in California. The locations and the permitted, operating, and remaining capacities of the hazardous and non-hazardous waste landfills are summarized in Table UTIL-1.

TABLE UTIL-1
Solid and Hazardous Waste Disposal Facilities in the Project Area

Waste Disposal Site	Title 23 Class	Maximum Permitted Capacity (MCY)	Current Operating Capacity* (tons/day)	Remaining Capacity (MCY)	Estimated Closure Date
CLASS I LANDFILLS					
Clean Harbors Buttonwillow Landfill EPA CAD980675276 2500 West Lokern Road Buttonwillow, CA 93206	I	14.300	10,482	9.50	2040
CLASS II LANDFILLS					
Waste Management Kettleman Hills Landfill EPA CAD000646117 36251 Old Skyline Road Kettleman City, CA 93239	II	10.700	8,000	6.0	2037-2038
McKittrick Waste Treatment Site 56533 Highway 58 McKittrick, CA 93224	II	2.092	1,180	0.841	2029

TABLE UTIL-1
Solid and Hazardous Waste Disposal Facilities in the Project Area

Waste Disposal Site	Title 23 Class	Maximum Permitted Capacity (MCY)	Current Operating Capacity* (tons/day)	Remaining Capacity (MCY)	Estimated Closure Date
CLASS III LANDFILLS					
Bakersfield Metropolitan (Bena) SLF 2951 Neumarkel Road Caliente, CA 93518	III	53.0	4,500	34.9	2038
Boron Sanitary Landfill 11400 Boron Avenue Boron, CA 93516	III	1.003	200	0.208	2013
Shafter-Wasco Sanitary Landfill 17621 Scofield Avenue Shafter, CA 93263	III	11.635	888	7.9	2027
Ridgecrest-Inyokern Sanitary Landfill 3301 Bowman Road Ridgecrest, CA 93555	III	5.993	701	5.0	2012
Taft Sanitary Landfill 13351 Elk Hills Road Taft, CA 93268	III	8.787	419	6.679	2123
Tehachapi Sanitary Landfill 12001 Tehachapi Blvd. Tehachapi, CA 93561	III	3.388	1,000	0.875	2014

* Maximum Permitted Throughput
Notes:
MCY = million cubic yards
Source: CIWMB/SWIS, June 2010.

Disposal Trend
The County of Los Angeles plans for countywide solid waste disposal capacity in 15-year periods, where the current planning period is from 2008–2022. The 2007 Los Angeles County Countywide Integrated Waste Management Plan Annual Report (May 2009) projects that the County would have a shortage of permitted disposal capacity during the current planning period if the County continues with status quo disposal practices (LACDPW, 2009). However, the annual report also presents combinations of various strategies that, if implemented, would feasibly allow Los Angeles County to meet the disposal capacity needed during the 15-year planning period. The strategies include approval of planned expansion of existing landfills; approval of planned new facilities; development of additional conversion technologies; increase in waste reduction and recycling; and expansion of transfer and processing infrastructure (LACDPW, 2009).

Based on analysis of disposal trends in recent years, however, LACDPW has observed that the current economic downturn has weakened consumer demand for materials, impacted the construction industry, and slowed the production and manufacturing of goods. As a result, the amount of waste that businesses

and the public generate and dispose of has been affected (LACDPW, 2009). From 2000 to 2005, the County experienced an increase of solid waste disposal that resulted from growth in population, economy, and the building industry. However, from 2006 to 2008, which represents a timeframe that includes effects of the economic downturn, the County experienced an overall 19.6 percent decline (from 33,731 to 27,130 tons per day) (Los Angeles County Solid Waste Management Committee, 2009). LACDPW expects that the decline would continue into 2009 (LACDPW, 2009), and the effect of the decline is estimated to extend landfill lifetimes. The County estimates that the Calabasas Landfill is expected to have a 3.5-year increase in operational years; the Antelope Valley Landfill lifetime has been increased by 2 years; and Scholl Canyon has an increased lifetime of 1.8 years (Los Angeles County Solid Waste Management Committee, 2009).

Impact Discussion

Impacts related to utilities/other services have been analyzed using significance criteria derived from the County of Los Angeles Initial Study Checklist and the CEQA Appendix G checklist. Taking into consideration the significance criteria of both checklists (which are nearly identical), the Project could have a potentially significant effect if one or more of the following were to occur:

a. Is the project site in an area known to have an inadequate public water supply to meet domestic needs or to have an inadequate ground water supply and proposes water wells?

The Project site is not currently served by a public domestic water supply system or by a reclaimed water supply. As described in Resources: 1. Water Quality, water supply impacts would be less than significant. The project wells will be operated within compliance with Title 11 of the Los Angeles County Code and applicable state regulations and California well standards. If, during the initial 15 years of Project operations, public water (potable and/or reclaimed water) becomes available via a public pipeline within 1 mile of the Project, the Project Owner will utilize such water if such water is available in sufficient long-term quantity and quality at a unit price that is economically viable for the Project; and if the Project can acquire a right-of-way using commercially reasonable efforts in which to construct and operate a pipeline connecting to such a public pipeline.

The County of Los Angeles Department of Public Health commented that the Project will be required to comply with Environmental Health's Potable Water Availability Requirements for Residential and Commercial Development, which require the applicant to demonstrate the availability of an adequate, sustainable supply of drinking water from an approved source (See Appendix M). The project's limited potable water needs are related to a small number of personnel and visitors that are likely to be onsite at any given time. The source of that water will be submitted to the Department of Public Health for approval. No new wells will be constructed and the applicant will submit documentation relating to existing water wells onsite being in compliance with California well standards and standards of Environmental Health.

b. Is the project site in an area known to have an inadequate water supply and/or pressure to meet fire fighting needs?

The Project site is in a remote area and fire fighting infrastructure (e.g., hydrants) is not available. The County Fire Department has requested onsite water storage to provide necessary water in the event of a fire. The PV modules and ancillary equipment are constructed out of fire-retardant material and represent a low fire hazard risk. Additionally, routine weed abatement and landscape maintenance will occur. The O&M building will be equipped with a fire suppression system consistent with Los Angeles County Building Codes. As such, the Project represents a less than significant impact.

c. Could the project create problems with providing utility services, such as electricity, gas, or propane?

Electricity for the Project would be supplied during construction by an onsite temporary power pole that would take power from SCE local distribution lines. Power would be drawn from transmission lines that are located along 210th Street West. Electrical services during the Project operation would be provided by SCE's local distribution lines along 210th Street West. Natural gas and propane would not be required by the Project for construction or operation. As a result, Project site construction and operation would be expected to cause less than significant impacts to utility services.

d. Are there any other known service problem areas (e.g., solid waste)?

The Project will produce a small amount of solid and hazardous waste associated with maintenance activities, as detailed in the Project Description. Class I, II, and III landfills (shown in Table UTIL-1) have sufficient permitted capacity to accommodate the Project's solid waste disposal needs. Thus, impacts are expected to be less than significant.

e. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services or facilities (e.g., fire protection, police protection, schools, parks, roads)?

As discussed in the Traffic and Access, Fire Protection Services, and Sheriff Services sections, construction and operation activities at the Project site would be expected to result in less than significant impacts to maintain acceptable levels of service, service ratios, response times, and performance objectives. Therefore, the Project construction and operation activities would not be expected to require new or physically altered roads, fire facilities, or sheriff facilities. The Project does not involve residential development, growth-inducing impacts, or recreational uses that would affect schools and parks. As a result, Project construction and operation would be expected to result in no impact to require new or physically altered government facilities.

f.1. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

No significant wastewater will be generated from operation of the Project. The PV module washwater will be demineralized water and will only contain dust washed off of the panels. This washwater will be allowed to soak into the ground and evaporate as it drips off the PV modules. Domestic wastewater, collected from sinks, toilets, and other sanitary facilities, will be discharged to an onsite septic system. The septic system will be permitted through the LACDPH and be located adjacent to the O&M building. Construction and operation of the Project would therefore result in no impact to wastewater treatment facilities.

f.2. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

As stated previously, no significant wastewater will be generated from the PV array operation, and no connection will exist from the Project to local wastewater treatment facilities. The Project would not require construction of new stormwater drainage facilities or expansion of existing facilities. Thus, Project construction and operation would result in no impact to wastewater treatment facilities.

The historical production rates and current pumping capacity of existing onsite wells exceed the Project's construction and operation water demand requirements. Sufficient water supplies are available to serve the Project from existing entitlements and resources. The Project therefore would not require or result in

the construction of new public water treatment facilities or the expansion of current facilities. Thus, Project construction and operation would result in no impact to water treatment facilities.

f.3. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Stormwater runoff at the site is predominantly from southwest to northeast, consistent with surface topography, and eventually discharges into the ephemeral drainage channel in the northern portion of the Project site's Western Parcel and across the northwestern corner of the Eastern Parcel. Figure PROJECT-2 shows the Project site's existing topography, site grading and drainage features, and offsite and onsite stormwater drainage channels, including the onsite parking area. The Project's electric generating units and related stormwater control structures will occupy approximately 580 acres of the 800-acre site. Drainage from the Project area would be discharged in accordance with historic drainage patterns to the natural drainage channel onsite.

An SWPPP incorporating BMPs for erosion control would be prepared and approved before the start of construction. During site preparation, the SWPPP would be implemented and initial erosion and sedimentation controls would be installed.

Because stormwater during Project construction and operation will be managed by drainage channels and stormwater control features onsite in accordance with the construction SWPPP, the Project will not require construction of new stormwater drainage facilities or expansion of existing facilities. Thus, Project construction and operation would result in no impact to stormwater drainage facilities.

f.4. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

As stated previously, water supply impacts would be less than significant. Sufficient water supplies are available to serve the Project from existing resources, and no new or expanded entitlements would be needed.

f.5. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

As stated previously, the Project would not require construction of new stormwater drainage facilities or expansion of existing facilities. Thus, Project construction and operation would result in no impact to any wastewater treatment providers and their existing commitments.

f.6. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

The Project would produce a small amount of solid and hazardous waste associated with maintenance activities, as detailed in the Project Description. Class I, II, and III landfills (shown in Table UTIL-1) have sufficient permitted capacity to accommodate the Project's solid waste disposal needs. Thus, there will be no impacts.

f.7. Comply with federal, state, and local statutes and regulations related to solid waste?

The Project would generate a small amount of waste material that will be disposed of at the nearest licensed facility to accept solid waste. The Project would comply with all federal, state, and local statutes and regulations related to solid waste. Thus, there will be no regulatory impacts.

<u>Mitigation and Residual Impact</u>

None proposed.

Cumulative Impact

Public services are limited in this area of the Antelope Valley; however, population is low so the demand is also low. Water is available onsite through the existing water wells and groundwater use would actually drop with Project implementation, resulting in a potentially beneficial cumulative effect. The cumulative impact that will result from the combination of the Project's incremental impact and the effects of other projects is not significant.

CONCLUSION

Considering the above information, could the project leave a significant impact (individually or cumulatively) on **utilities** resources?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/ No impact

References

Antelope Valley Areawide General Plan. Adopted December 4, 1986.

California Department of Water Resources (DWR). 2004. California's Ground Bulletin 118: South Lahontan Hydrologic Region, Antelope Valley Groundwater Basin. February 27, 2004.

Los Angeles County Countywide Integrated Waste Management Plan – 2007 Annual Report. May 2009.

Los Angeles County Department of Regional Planning (LACDRP). 2009. Antelope Valley Area Plan Update Background Report. April 2009.

Los Angeles County Solid Waste Management Committee-Integrated Waste Management Task Force. 2009. Observations on How the Current Economic Downturn Has Impacted Waste Disposal. March 19, 2009.

OTHER FACTORS - 1. GENERAL

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Will the project result in an inefficient use of energy resources?
b.	☐	☐	☒	Will the project result in a major change in the patterns, scale, or character of the general area or community?
c.	☐	☒	☐	Will the project result in a significant reduction in the amount of agricultural land?
d.	☐	☐	☐	Other factors?

STANDARD CODE REQUIREMENTS

☐ State Administrative Code, Title 24, Part 5, T-20 (Energy Conservation)

☐ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

☐ Lot Size ☐ Project Design ☐ Compatible Use

Regulatory Setting

The checklist questions identified above are specific to Los Angeles County.

Environmental Setting

The Project site is located in a rural and sparsely populated area of the Antelope Valley in the northern portion of Los Angeles County. The area has excellent solar capacity due to the high desert climatic conditions.

Impact Discussion

Impacts related to other development factors have been analyzed using significance criteria derived from the County of Los Angeles Initial Study Checklist and the CEQA Appendix G checklist. Taking into consideration the significance criteria of both checklists (which are nearly identical), the Project could have a potentially significant effect if one or more of the following were to occur:

a. Will the project result in an inefficient use of energy resources?

The Project is a solar PV facility and would result in 92 MW of clean renewable energy delivered to the grid. This would be an efficient use of energy resources. There would be no impact.

b. Will the project result in a major change in the patterns, scale, or character of the general area or community?

As reflected in the Project Visual Simulations, the visual character of the area would not be significantly affected by the Project. The facility would be fenced and therefore inaccessible to the general public. A solar PV facility does not result in significant noise, light, or odor; as such, impacts would be less than significant.

c. *Will the project result in a significant reduction in the amount of agricultural land?*

See the discussion in Agriculture and Forestry Resources.

Mitigation and Residual Impact

None proposed.

Cumulative Impact

Solar PV is a relatively low-impact renewable energy method that generates clean power. It is foreseeable that other solar PV projects, such as the AV Solar Ranch One Project, may be proposed in the Antelope Valley to harness the available solar resources. However, when combined with the impacts of the other potential cumulative projects listed in Appendix A and shown on Figure CUMULATIVE-1, the incremental addition of the Project would not contribute to cumulatively significant impacts.

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to any of the above factors?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/ No impact

OTHER FACTORS - 2. ENVIRONMENTAL SAFETY/ HAZARDS AND HAZARDOUS MATERIALS

All Items in this section are the same as CEQA Appendix G, VIII. Hazards and Hazardous Materials

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Are any hazardous materials used, transported, produced, handled, or stored on-site?
b.	☐	☒	☐	Are any pressurized tanks to be used or any hazardous wastes stored on-site?
c.	☐	☒	☐	Are any residential units, schools, or hospitals located within 500 feet and potentially adversely affected?
d.	☐	☒	☐	Have there been previous uses that indicate residual soil toxicity of the site or is the site located within two miles downstream of a known groundwater contamination source within the same watershed?
e.	☐	☐	☒	Would the project create a significant hazard to the public or the environment involving the accidental release of hazardous materials into the environment?
f.	☐	☒	☐	Would the project emit hazardous emissions or handle hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?
g.	☐	☒	☐	Would the project be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or environment?
h.	☐	☒	☐	Would the project result in a safety hazard for people in a project area located within an airport land use plan, within two miles of a public or public use airport, or within the vicinity of a private airstrip?
i.	☐	☒	☐	Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?
j.	☐	☒	☐	Other factors? Not applicable.

☐ **MITIGATION MEASURES**

☐ Toxic Clean-up Plan

☐ **OTHER CONSIDERATIONS**

Regulatory Setting

This section provides an overview of federal and state regulations related to environmental safety/hazards and hazardous materials issues applicable to the Project.

Federal

U.S. Environmental Protection Agency
EPA is the principal regulatory agency responsible for the safe use and handling of hazardous materials.

Superfund Amendments and Reauthorization Act Public Law 99-499 (100 Stats. 1613)
The Superfund Amendments and Reauthorization Act (SARA) amended the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, 42 U.S.C. § 9601 et seq.) on October 17, 1986. SARA reflected EPA's experience in administering the complex Superfund program during its first 6 years and made several important changes and additions to the program. SARA also required EPA to revise the Hazard Ranking System to ensure that it accurately assessed the relative degree of risk to human health and the environment posed by uncontrolled hazardous waste sites that may be placed on the National Priorities List.

SARA specifically addresses the management of hazardous materials by requiring public disclosure of information relating to the types and quantities of hazardous materials used at various types of facilities. SARA Title III (42 U.S.C. § 11001 et seq.) is referred to as the Emergency Planning and Community Right to Know Act. The Act addresses community emergency planning, emergency release notification, and hazardous materials chemical inventory reporting.

Resource Conservation and Recovery Act 42 U.S.C. § 6901 et seq
The Resource Conservation and Recovery Act (RCRA) gave EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous waste.

State

California Health and Safety Code Section 25500
The California Health and Safety Code (CHSC), Section 25500, requires companies that handle hazardous materials in sufficient quantities to develop a Hazardous Materials Business Plan (HMBP). The HMBP includes basic information on the location, type, quantity, and health risks of hazardous materials handled, stored, used, or disposed of that could be accidentally released into the environment. It also includes a plan for training new personnel and for annual training of all personnel in safety procedures to follow in the event of a release of hazardous materials. Additionally, the HMBP includes an Emergency Response Plan and identifies the business representative able to assist emergency personnel in the event of a release.

Department of Toxic Substances Control
The objective of the Department of Toxic Substances Control (DTSC) is to protect human health and the environment from exposure to hazardous materials and waste. The DTSC has the authority to respond to and enforce the cleanup of hazardous substance releases, pursuant to the Hazardous Substance Account Act (HSA Act), Chapter 6.8, Division 20, of the Health and Safety Code, and the cleanup of hazardous waste under the Hazardous Waste Control Law, Chapter 6.6 (commencing with Section 25100).

Environmental Setting

The Project site is not located on a known site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. The Project would not create a significant hazard to the public or to the environment. No impacts would occur as a result of implementing the Project; therefore, no mitigation measures are required.

The Project area is located within the Edwards AFB R-2508 Complex. The R-2508 Complex includes all the airspace and associated land currently used and managed by the three principal military activities in the Upper Mojave Desert region: Air Force Flight Test Center, Edwards AFB; National Training Center, Fort Irwin; and Naval Air Weapons Station China Lake. Regulations for the R-2508 Complex include guidance for aircraft over populated areas; these regulations reduce the hazards for people residing or working in the Project area.

The Project site is not located in a Very High Fire Hazard Severity Zone (Fire Zone 4). The Project site lies in the Moderate Fire Hazard Severity Zone (California Department of Forestry and Fire Protection. Website: http://www.fire.ca.gov/fire_prevention/fhsz_maps/fhsz_maps_losangeles.php).

The Project is not located in a high fire hazard area. The proposed access road from the entrance to the O&M building will be an all-weather surface. For dust control, the service and site perimeter roads will be treated with a dust palliative compacted over native soils. The site will be graded, as necessary, using a balanced cut-and-fill approach, without imported fill except for drainage control riprap rock material and structural pad engineered base materials. The Project would be constructed with adequate access.

Impact Discussion

Impacts related to environmental safety have been analyzed using significance criteria derived from the County of Los Angeles Initial Study Checklist and the CEQA Appendix G checklist. Taking into consideration the significance criteria of both checklists (which are nearly identical), the Project is considered to have a potentially significant effect if one or more of the following were to occur:

a. Are any hazardous materials used, transported, produced, handled, or stored on-site?

Previous agricultural activities may have needed fertilizers and pesticides. A Phase I ESA was performed on both the Western and Eastern Parcels and a Phase II on the Eastern Parcel to identify RECs that may potentially affect the Project and to characterize the nature and general magnitude of impacts associated with any REC. The ESAs are included in Appendix L. According to the ESA findings there is no evidence of historic storage of any chemicals or hazardous materials on the Eastern Parcel; however, small quantities of pesticides and fertilizers may have been applied during prior farming activities. Some of the agricultural pesticides and fertilizers potentially used on the Project site could leave low-level, residual chemical constituents in the soil; however, based on the small quantities, it is unlikely that the soil or ground water on the Project site has been adversely impacted by use of pesticides and fertilizers. The Western Parcel did exhibit some surface evidence of petroleum hydrocarbon release; however, soil borings indicated that any there was limited impact to surficial soil. The findings of the ESA address the County of Los Angeles Fire Department, Health and Hazardous Materials Division, comments dated September 20, 2010 (included in Appendix M). It has been determined that no further site assessment, soil mitigation or management strategies are necessary.

Construction of the Project would require the short-term transport, use, or disposal of hazardous materials, such as fuels, lubricants, adhesives, solvents, and asphalt wastes. The potential risk associated with the accidental discharge during use and storage of such construction-related hazardous materials during Project construction is considered low. This is because the handling of these materials would be addressed through the implementation of BMPs pursuant to the intent of the National Pollutant Discharge Elimination System General Construction Permit.

Operation of the facility could generate potential hazardous waste in the form of biodegradable dielectric fluid and mineral oil from the transformers and miscellaneous electrical equipment. The spent oil will be collected and delivered to a recycling company when it is removed from the equipment. This waste material will not be stored onsite. If thin film modules containing cadmium-telluride are installed, the materials contained within the solar modules could be a potential hazardous waste. In the event of a thin

film module malfunction, the module manufacturer's pre-funded recycling program will be used to collect and recycle the modules.

Some of the onsite electrical equipment may require the use of SF6 (discussed in the Greenhouse Gas Emissions section of this document). SF6 is not regulated as a hazardous substance or extremely hazardous substance under CERCLA, but meets the definition of a hazardous material for which reporting of a release would be required under California's hazardous materials release reporting requirements, unless the release did not pose a threat to human health or the environment.

Operation of the Project would not require the use or storage of significant quantities of hazardous materials beyond the dielectric fluid, mineral oil and SF6; therefore, no substantial potential for accidental explosion or major releases of hazardous substances is expected. Workers will be trained to properly identify and handle hazardous waste in the event it is generated at the site. No battery backup component exists, which minimizes the need for transporting, using, or disposing of the hazardous materials that may be associated with the Project. Furthermore, standard operating procedures would prevent the use of fuels, lubricants, adhesives, solvents, asphalt wastes, biodegradable dielectric fluid, and cadmium-telluride from causing a significant hazard to the public or environment. Therefore, impacts would be less than significant.

b. Are any pressurized tanks to be used or any hazardous wastes stored on-site?

No pressurized tanks will be used onsite. No hazardous wastes, as defined by the EPA, would be stored onsite. A potential hazardous waste that could be generated during facility operation is used biodegradable dielectric fluid and mineral oil from the transformers and miscellaneous electrical equipment. The spent oil will be collected and delivered to a recycling company when it is removed from the equipment. This waste material will not be stored onsite. If thin film modules containing cadmium-telluride are installed, the materials contained within the solar modules could be a potential hazardous waste. In the event of a module malfunction, the module manufacturer's pre-funded recycling program will be used to collect and recycle the modules.

Workers will be trained to properly identify and handle hazardous waste in the event it is generated at the site. No battery backup component exists, which minimizes the need for transporting, using, or disposing of the hazardous materials that may be associated with the Project. Furthermore, standard operating procedures would prevent the use of fuels, lubricants, adhesives, solvents, asphalt wastes, biodegradable dielectric fluid, and cadmium-telluride from causing a significant hazard to the public or environment. Therefore, impacts would be less than significant.

c. Are any residential units, schools, or hospitals located within 500 feet and potentially adversely affected?

No residential units, schools, or hospitals are located within 500 feet of the Project site. The nearest sensitive receptor is located at the intersection of 192nd Street and West Avenue C, which is approximately 4,000 feet from the Project site.

d. Have there been previous uses that indicate residual soil toxicity of the site or is the site located within two miles downstream of a known groundwater contamination source within the same watershed?

As noted in a. above, previous agricultural activities may have needed fertilizers and pesticides. A Phase I ESA was performed to identify RECs that may potentially affect the Project and to characterize the nature and general magnitude of impacts associated with any REC. The ESA is included in Appendix L. According to the ESA findings, there is no evidence of historic storage of any chemicals or hazardous materials onsite. However, some of the agricultural pesticides and fertilizers potentially used on the Project site could leave low-level, residual chemical constituents in the soil. Based on the small quantities, it is

unlikely that the soil or ground water on the Project site has been adversely impacted by use of pesticides and fertilizers. The findings of the ESA address County of Los Angeles Fire Department, Health and Hazardous Materials Division, comments dated September 20, 2010 (included in Appendix M). It has been determined that no further site assessment, soil mitigation or management strategies are necessary.

There have not been previous uses to indicate that the Project site is located within 2 miles downstream of a known groundwater contamination source. The Project site has been farmed and shows no signs of residual soil toxicity. Therefore, there would be no impact.

e. Would the project create a significant hazard to the public or the environment involving the accidental release of hazardous materials into the environment?

As previously described, the Project would use short-term construction-related lubricants and fuel. Operations would require the use of biodegradable dielectric fluid, SF6, and mineral oil from the transformers and miscellaneous electrical equipment. Workers will be trained to properly identify and handle hazardous waste to minimize any potential risk of release of hazardous materials into the environment. Impacts would be less than significant.

f. Would the project emit hazardous emissions or handle hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No existing or proposed schools are within 0.25 mile of the Project site. The nearest school, Neenach Elementary School, is located approximately 5 miles west of the Project site. No impacts would occur as a result of implementing the Project; therefore, no mitigation measures are required.

g. Would the project be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or environment?

The Project is not located on a known site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. The Project would not create a significant hazard to the public or the environment. No impacts would occur as a result of implementing the Project; therefore, no mitigation measures are required.

h. Would the project result in a safety hazard for people in a project area located within an airport land use plan, within two miles of a public or public use airport, or within the vicinity of a private airstrip?

The Project area is located within the Edwards AFB R-2508 Complex. The R-2508 Complex includes all the airspace and associated land currently used and managed by the three principal military activities in the Upper Mojave Desert region: Air Force Flight Test Center, Edwards AFB; National Training Center, Fort Irwin; and Naval Air Weapons Station China Lake. Regulations for the R-2508 Complex include guidance for aircraft over populated areas; these regulations reduce the hazards for people residing or working in the Project area.

In addition, the Project is not near a private airstrip. The nearest privately owned airport is the Skyottee Ranch Airport, which is located approximately 5 miles to the northeast of the Project area.

The only substantial aboveground modifications would be the solar arrays, with a maximum height of approximately 8 feet. This height is not sufficient to impact air traffic. The solar development is an allowable use in the area; as a result, there would be no impact on air traffic patterns. No impacts would occur as a result of implementing the Project; therefore, no mitigation measures are required.

i. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Activities associated with the Project would not impede existing emergency response plans for the Project site and/or for other land uses in the Project vicinity. All vehicles and stationary equipment would be staged off public roads and would not block emergency access routes. Accordingly, Project operation will not impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. No impacts would occur as a result of implementing the Project; therefore, no mitigation measures are required.

Mitigation and Residual Impact

None proposed.

Cumulative Impact

The context for the analysis of cumulative impacts from environmental safety is limited to the immediately surrounding area and does not take into consideration the potential cumulative projects listed in Appendix A and shown on Figure CUMULATIVE-1. Hazardous materials and contamination issues are largely site-specific and generally would not combine with impacts from other projects to result in cumulative impacts.

Based on land uses in the surrounding area (primarily agricultural and open space) and the limited amount and type of hazardous materials to be used as part of the Project, no significant incremental cumulative impacts associated with environmental safety would be expected to occur as a result of Project implementation. Regulations implemented by the DTSC, LACFD, and the RWQCB would require similar measures being applied to other potential developments with environmental safety issues in the Project region. Therefore, the cumulative impact that will result from the combination of the Project's incremental impact and the effects of other projects is not significant.

CONCLUSION

Considering the above information, could the project have a significant impact relative to **environmental safety/hazards and hazardous materials**?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/ No impact

OTHER FACTORS - 3. LAND USE

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Can the project be found to be inconsistent with the plan designation(s) of the subject property?
b.	☐	☒	☐	Can the project be found to be inconsistent with the zoning designation of the subject property?
c.				Can the project be found to be inconsistent with the following applicable land use criteria:
	☐	☒	☐	Hillside Management Criteria?
	☐	☒	☐	SEA Conformance Criteria?
	☐	☒	☐	Other?
				Applicable habitat conservation plan or natural community conservation plan?
d.	☐	☒	☐	Would the project physically divide an established community?
e.	☐	☒	☐	Other factors?
				Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect? (CEQA Appendix G, X. Land Use and Planning. b.)

☐ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

Regulatory Setting

No Project-related federal or state statutes were identified.

Local

Southern California Association of Governments

The Southern California Association of Governments (SCAG) is responsible for most regional planning in Southern California (Ventura, Los Angeles, Riverside, San Bernardino, Orange, and Imperial counties). SCAG has been preparing long-range growth and development plans for the SCAG region since the early 1970s. SCAG documents provide a framework to coordinate local and regional decisions regarding future growth and development. An important component of this process is the preparation of growth forecasts at intervals ranging from 3 to 5 years.

County of Los Angeles General Plan
On November 25, 1980, the County of Los Angeles approved the General Plan. The General Plan Land Use Element includes policies and land use maps to guide the future development of Los Angeles County. The General Plan includes a series of area plans which address specific policies for each of the identified geographic areas. The proposed project is located within the Antelope Valley Areawide General Plan of the Los Angeles County General Plan.

Los Angeles County General Plan
Conservation and Open Space Element Policy 7. Preserve SEAs and habitat management areas by appropriate measures, including preservation, mitigation, and enhancement.

Antelope Valley Areawide General Plan
Policy Statement 69. Protect significant vegetation such as the Joshua Tree.

Policy Statement 123. Preserve the Antelope Valley's SEAs in as viable and natural a condition as possible, recognizing the resource values at stake and the constraints imposed by competing priorities and objectives.

Policy Statement 141. Prohibit the harvesting of Joshua or juniper trees for fuel purposes or for transplantation out of their normal habitat area.

County of Los Angeles Zoning Ordinance
Development of the Project site is regulated by the County of Los Angeles zoning ordinance (Title 22). This ordinance contains the regulatory framework that specifies allowable uses for real property and development intensities; the technical standards such as site layout, building setbacks, heights, lot coverage, parking, etc.; aesthetics related to physical appearance, landscaping and lighting; a program that implements policies of the General Plan; and the procedural standards for amending or establishing new zoning regulations.

Environmental Setting

The Project surroundings are typical of the western Antelope Valley and are characterized by farmland, rural, scattered residences and small communities (e.g., Neenach, Antelope Acres), and undeveloped lands. Land use at the Project site includes former farmland that has been recolonized by shrubby vegetation, and undeveloped areas. Land adjacent to the Project site is primarily former farmland that is currently undeveloped. Another land use surrounding the Project site is active farmland adjacent to the northwestern boundary of the Western Parcel and the Los Angeles County-designated Joshua Tree Woodland SEA 0.25 mile south of the Western Parcel and adjacent to the eastern side of the Eastern Parcel.

Pursuant to the Antelope Valley Areawide General Plan of the Los Angeles County General Plan, the Project site is designated Non Urban (N1) and is an Agricultural Opportunity Area (County of Los Angeles, 1986). Pursuant to Los Angeles County Code 22.24, the Project site is zoned Heavy Agriculture (A-2-5) (County of Los Angeles, 2010a) (see Figures LAND-1 and LAND-2).

The majority of lands immediately adjacent to the Project site are fields that were former farmland but have been recolonized by vegetation such as rabbit brush and non-native invasive species. The exceptions to this are active farmlands adjacent to the northwestern corner of the Western Parcel and an SEA adjacent to the eastern side of the Eastern Parcel and 0.25 mile south of the Western Parcel. SEAs are ecologically important systems that are often integral to the preservation of threatened or endangered species and integral to the conservation of the County's biological diversity. The Project is adjacent to the Joshua Tree Woodland SEA system (see Figure BIOTA-1). Policy Statement 123 of the Antelope Valley Areawide General Plan mandates the preservation of SEAs as viable and natural a condition as possible, recognizing the resource values and the constraints imposed by competing priorities and objectives.

Projects within a SEA must provide a biota report to be reviewed by the SEATAC, who makes an advisory recommendation to the decision-maker.

The proposed generation-tie line would cross former farmland that has been recolonized by shrubby non-native vegetation and heads south along 210th Street West adjacent to the boundary of SEA #60. Pursuant to the Antelope Valley Areawide General Plan, land crossed by the generation-tie line is designated N1 (County of Los Angeles, 1986). Pursuant to Los Angeles County Code 22.24, the generation-tie line crosses land zoned A-2-5 and A-1-2 (Light Agriculture) (County of Los Angeles, 2010a) (see Figure LAND-1).

Recreational opportunities in the area include the Los Angeles County Desert Pines Wildlife Sanctuary, the Arthur B. Ripley Desert Woodland State Park, and the Antelope Valley Poppy Preserve State Park. These recreational facilities are located approximately 4 miles south, 3 miles south, and 7 miles southeast, respectively, of the Project site.

Impact Discussion

Impacts related to land use have been analyzed using significance criteria derived from the County of Los Angeles Initial Study Checklist and the CEQA Appendix G checklist. Taking into consideration the significance criteria of both checklists (which are nearly identical), the Project is considered to have a potentially significant effect if one or more of the following were to occur:

a. Can the project be found to be inconsistent with the plan designation(s) of the subject property?

The Project is consistent with the plan designation for the subject property. Pursuant to the Antelope Valley Plan, the Project site land use designation is N1, which may be characterized as low-density and rural. “Utility installations” are allowable uses of N1 areas, given compliance with the General Conditions for Development in Chapter D of the Antelope Valley Plan. Pursuant to the N1 designation, the Project would be considered a “non-residential use in a non-urban area.”

The Antelope Valley Plan assigns the Agricultural Opportunity Area designation to areas such as the Project site that are large and are either active cropland or were recently active farmland (County of Los Angeles, 1986). The designation establishes agricultural activities as a priority land use over potentially incompatible adjacent development and discourages the premature conversion of these areas to other uses. Both the Los Angeles County General Plan and the Antelope Valley Plan specify that the County will evaluate non-agricultural use applications based on their potential impact to nearby agricultural operations. The Project would not interfere with agricultural activity in surrounding areas. Project development, construction, and staging areas would occur entirely within Project site boundaries. No Project access roads or generation-tie lines would be located on active farmlands or on lands designated Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance outside the Project site.

b. Can the project be found to be inconsistent with the zoning designation of the subject property?

The Project is consistent with existing zoning codes. Pursuant to Los Angeles County Code 22.24, the Project site is zoned Heavy Agriculture (A-2) (County of Los Angeles, 2010a). Electrical power generating plants are permitted in A-2 zones with a conditional use permit. The Project generation-tie lines would cross land zoned Light Agriculture (A-1). Allowable land uses within this zone include utility facilities, transmission lines, and poles. The Project access road would also cross land zoned A-1. The Project would require an access road along 210th Street between SR 138 and the Project site; the improved intersection of 210th Street West and SR 138 would require an encroachment permit from Caltrans. The Project would also require the improvement of an access road along West Avenue C. These road improvements would require a road permit and would be consistent with Los Angeles County Code. There would be no impact.

c. Can the project be found to be inconsistent with the following applicable land use criteria:

Hillside Management Criteria?

SEA Conformance Criteria?

Other?

Applicable habitat conservation plan or natural community conservation plan?

Hillside management criteria do not apply to the Project because the slope of the Project site is less than 25 percent.

The Project site is not located within a designated SEA so conformance criteria do not apply to the Project site. The gen-tie transmission line and access road will be located along 210th Street West, which is adjacent to SEA #60. The gen-tie transmission line will be placed as close to the roadway as feasible, along the boundary of the SEA and 210th Street West. Policy Statements 69 and 141 protect Joshua trees and habitat. Transmission power poles can be discretely placed to avoid any potential removal of Joshua trees or to avoid Joshua tree habitat adjacent to SEA #60.

Development within an SEA is not prohibited but rather reviewed by the SEA Technical Advisory Committee (TAC) to ensure that appropriate conditions of approval of a project are implemented to accommodate the longevity of sensitive resources. However, in the event that the gen-tie alignment does extend into the SEA, the SEA TAC would have the opportunity to review the gen-tie transmission line and place appropriate conditions of approval on the development to preserve habitat. Similarly, Antelope Valley Areawide General Plan Policy Statement 123 would only apply to the project if the generation tie-line extended within the boundary of the SEA.

No HCPs or local community conservation plans apply to the Project site. A portion of the Joshua Tree Woodland SEA is located 0.25 mile south of the Western Parcel, adjacent to the eastern side of the Eastern Parcel and adjacent to the generation-tie line corridor that will run along 210th Street West. However, construction and operation of the Project, the generation-tie line, and the access road would occur outside the SEA boundary lines; therefore, Project construction and operation would not affect the SEA.

d. Would the project physically divide an established community?

The Project would not physically divide an established community. The Project site is located in an area that consists of scattered rural residences, similar to rural Antelope Valley. The Project site is located approximately 3 miles east of the unincorporated community of Neenach, which has a population of approximately 800 (County of Los Angeles, 2010b). The Project would not divide the community nor would it change any public access routes to it; therefore, there would be no impact.

e. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

As described in a., b., and c., above, the Project would not conflict with any applicable land use plans, policies, or zoning ordinances adopted for the purpose of avoiding or mitigating an environmental effect. Therefore, there would be no impact.

Mitigation and Residual Impact

None proposed.

Cumulative Impact

The Project is consistent with the applicable land use policies, plans, and regulations. The Project's incremental effect on land use plans, policies, and regulations would also be less than significant when viewed in connection with the effects of past, current, and probable future projects (see potential cumulative projects listed in Appendix A and shown on Figure CUMULATIVE-1).

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to **land use** factors?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/ No impact

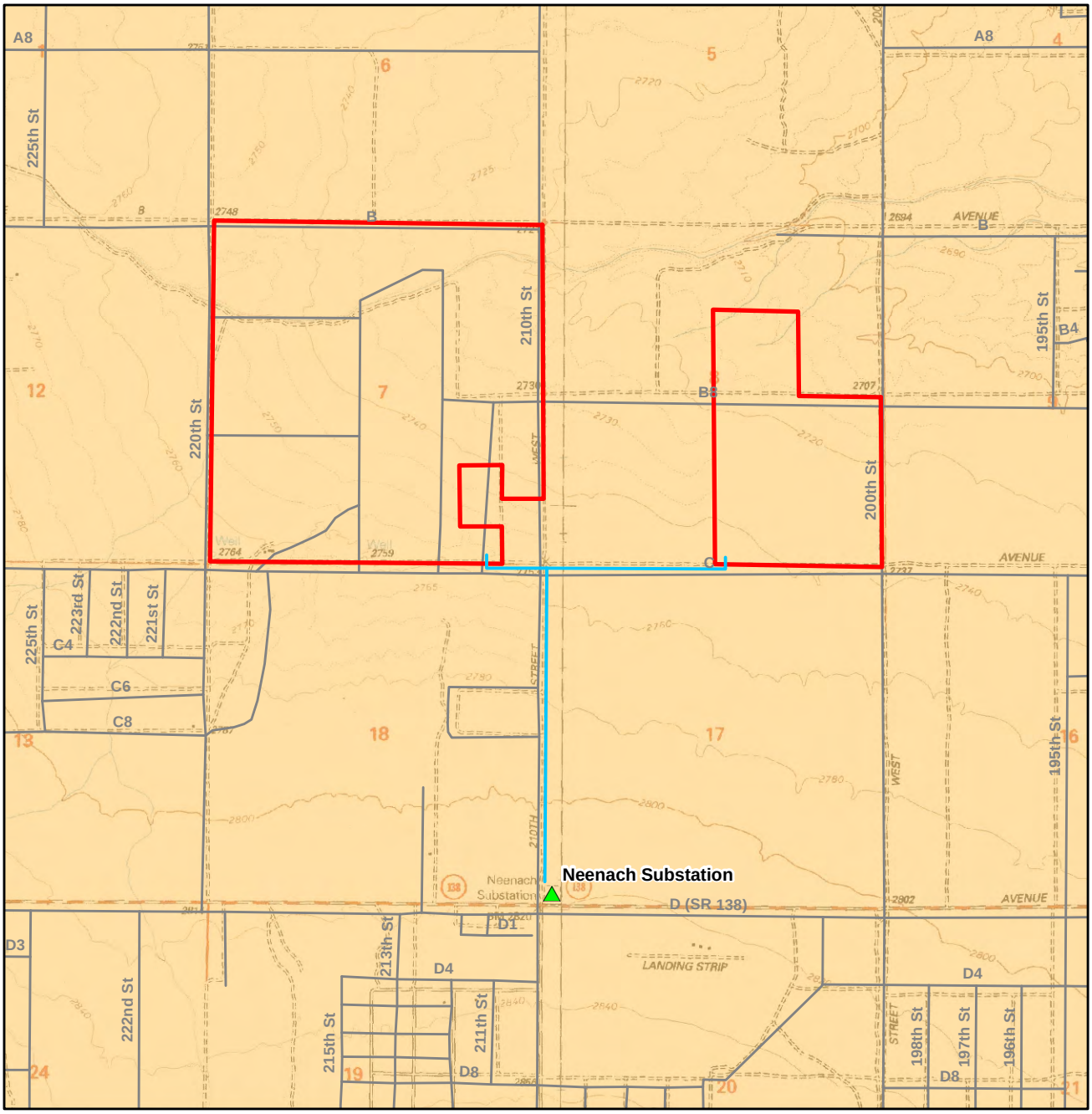
References

County of Los Angeles. 2010a. Zoning Ordinance Summary. http://search.municode.com/html/16274/index.htm

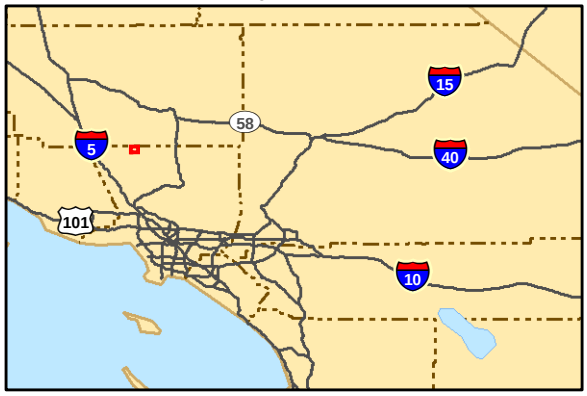
County of Los Angeles. 2010b. Preliminary Draft of the Antelope Valley Area Plan Update. http://planning.lacounty.gov/tnc

County of Los Angeles. 2008. County of Los Angeles Draft General Plan. http://planning.lacounty.gov/generalplan#gp-existing

County of Los Angeles. 1986. Antelope Valley Areawide General Plan—A Component of the Los Angeles County General Plan. Adopted by the Board of Supervisors. http://planning.lacounty.gov/view/antelope_valley_area_plan/



VICINITY MAP



LEGEND

- Existing Substation
- Proposed Gen-tie Route (66 kV)
- Project Site

Land Use Designation

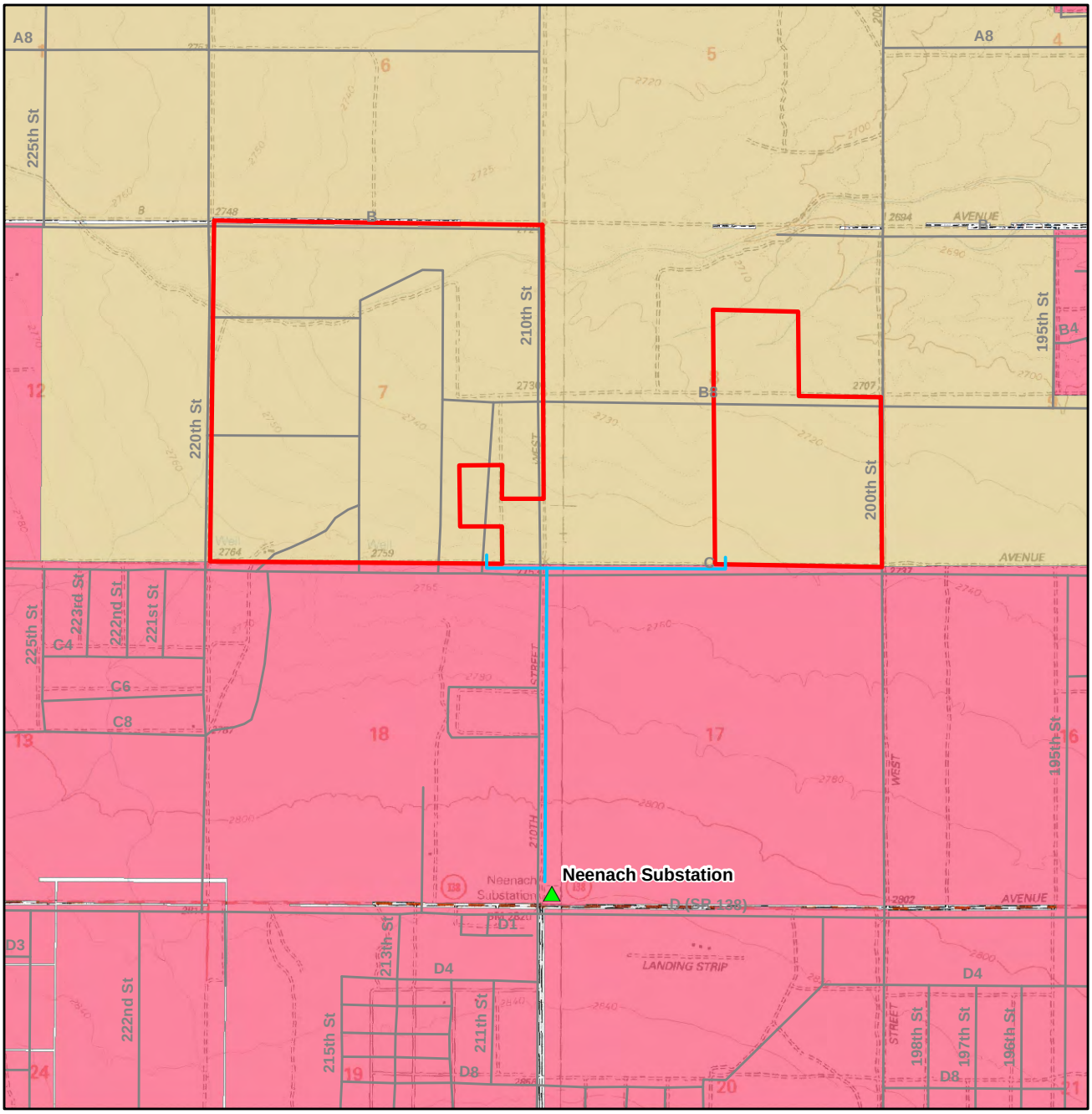
- N1 - Non-Urban 1 (0.5 du/ac)

Notes:
1. Los Angeles County General Plan, 2008.

N

0 1,250 2,500
Feet

FIGURE LAND-1
Project Site Land Use Designations
Alpine Solar Project
July 2010



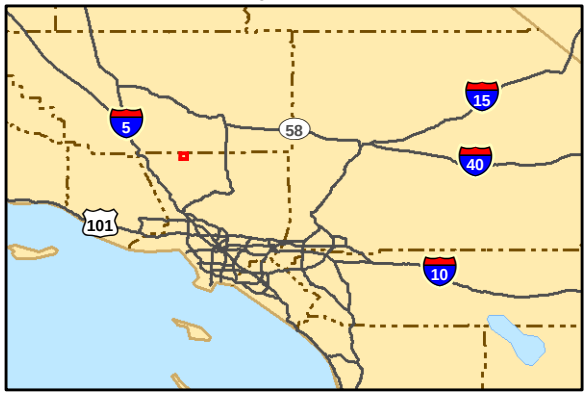
LEGEND

- Existing Substation
- Proposed Gen-tie Route (66 kV)
- Project Site

Zoning

- Heavy agriculture
- Light agriculture

VICINITY MAP



Notes:
1. Los Angeles County Code, 2007.

N

0 1,250 2,500
Feet

FIGURE LAND-2
Project Site Zoning
Alpine Solar Project
July 2010

OTHER FACTORS - 4. POPULATION/HOUSING/EMPLOYMENT/RECREATION

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Could the project cumulatively exceed official regional or local population projections?
b.	☐	☒	☐	Could the project induce substantial direct or indirect growth in an area (e.g., through projects in an undeveloped area or extension of major infrastructure)?
c.	☐	☒	☐	Could the project displace existing housing, especially affordable housing?
d.	☐	☐	☒	Could the project result in substantial job/housing imbalance or substantial increase in Vehicle Miles Traveled (VMT)?
e.	☐	☒	☐	Could the project require new or expanded recreational facilities for future residents?
f.	☐	☐	☐	Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?
g.	☐	☒	☐	Other factors? Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? (CEQA Appendix G, XV. Recreation. a.) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment? (CEQA Appendix G, XV. Recreation. b.)

☐ **MITIGATION MEASURES** ☐ **OTHER CONSIDERATIONS**

Regulatory Setting

No project related regulations were identified.

Environmental Setting

The Project site is located in the western Antelope Valley, which is characterized by scattered rural residences, and is 3 miles east of the community of Neenach, which has a population of approximately 800. However, the Project site lies within commuting distance of the largest

Antelope Valley cities: Lancaster and Palmdale. The average commuting time in Los Angeles County is 29.4 minutes (U.S. Census Bureau, 2000).

Lancaster is located approximately 20 miles southeast of the Project site and had an estimated population of 140,804 in 2006 (U.S. Census Bureau, 2010a). Palmdale is located approximately 25 miles southeast of the Project site and had an estimated population of 138,790 in 2006 (U.S. Census Bureau, 2010b). Rosamond, in Kern County, is located approximately 20 miles northeast of the Project site and had a population of 14,349 as of the 2000 Census (U.S. Census Bureau, 2000).

The Project's construction period would last from 12 to 18 months. On average, 200 construction workers (with a maximum of 240) would be needed per day. The construction workers would be hired from the local labor pool, which would include Lancaster, Palmdale, and Rosamond. Construction workers account for 6 to 7 percent of the local workforce in the Antelope Valley (U.S. Census Bureau, 2000).

The North Antelope Valley is an area defined by the U.S. Census Bureau that corresponds to the northern part of Los Angeles County. It includes the Project site and the city of Lancaster, but does not include Palmdale in Los Angeles County or Rosamond in Kern County. In the North Antelope Valley area, 3,890 people were in the construction industry as of the 2000 Census (U.S. Census Bureau, 2000). There were 2,955 people in the construction industry in Palmdale and 354 in Rosamond as of the 2000 Census (U.S. Census Bureau, 2000). A sufficient number of these local workers could be available for project construction because the unemployment rate in Los Angeles County, as of April, 2010, is 12.3 percent. This percentage is similar to that of the whole state, which is 12.6 percent (Employment Development Department [EDD], 2010; U.S. Bureau of Labor Statistics, 2010).

A substantial amount of vacant housing exists within commuting distance of the Project site. As of the 2000 Census, in the North Antelope Valley area 53,670 housing units existed; of these, 4,713 were vacant, of which 1,654 were for rent. In Palmdale 37,096 housing units existed; of these, 2,811 were vacant, of which 1,059 were for rent. In Rosamond, 5,597 housing units existed; of these, 609 were vacant, of which 323 were for rent (U.S. Census Bureau, 2000).

Impact Discussion

Impacts related to population/housing/employment/recreation have been analyzed using significance criteria derived from the County of Los Angeles Initial Study Checklist and the CEQA Appendix G checklist. Taking into consideration the significance criteria of both checklists (which are nearly identical), the Project is considered to have a potentially significant effect if one or more of the following were to occur:

a. Could the project cumulatively exceed official regional or local population projections?

And

b. Could the project induce substantial direct or indirect growth in an area (e.g., through projects in an undeveloped area or extension of major infrastructure)?

The Project would not directly or indirectly induce substantial population growth. The Project does not include infrastructure improvements that would open new development areas that would increase population; it does not include any new residential development; and it would not provide permanent, long-term, onsite jobs during its operation. Los Angeles County determines where growth will occur; the applicant does not designate where and what new development may occur within the area. Generation of electricity would allow the County's electrical service provider to continue to accommodate existing population as well as growth planned by Los Angeles County.

Further, a significant relocation of construction workforce is unlikely given the availability of a sufficient construction workforce within commuting distance and the current high unemployment rate in Los Angeles County. The construction period would last 12 to 18 months and would require an average of 200 workers per day with a maximum of 240 workers per day. A sufficient construction workforce exists within commuting distance of the Project site to accommodate Project construction needs. As of the 2000 Census, 3,890 construction workers were in the North Antelope Valley area of Los Angeles County. Another 2,955 construction workers were in the city of Palmdale, and 352 were in Rosamond (U.S. Census Bureau, 2000). A sufficient number of these local workers are expected to be available for Project construction because the unemployment rate in Los Angeles County, as of April 2010, is 12.3 percent. This percentage is similar to that of the whole state, which is 12.6 percent (EDD, 2010; U.S. Bureau of Labor Statistics, 2010).

During Project operation, one to two maintenance personnel would be onsite daily, and any increase in population related to permanent employment would be negligible.

Although the Project site is located in a relatively undeveloped area, it is not likely to induce substantial indirect population growth through the addition of an electricity source. The only change in public infrastructure associated with the Project would be the improvement of 1 mile of county road from SR 138 to the Project site. An access road along West Avenue C would also be improved. However, these roads would dead-end at the Project site and would not change circulation patterns leading to population growth.

Because Project operation would not require any onsite staff and because the labor necessary to construct the Project would be available locally, the Project would not cause substantial population growth, nor would it contribute to the exceeding of regional or local population projections.

Project construction and operation would result in no population growth nor would Project construction impact regional or local population projections. Impacts would be less than significant.

c. Could the Project displace substantial numbers of existing housing, especially affordable housing?

The Project would not physically displace substantial existing housing units because no housing exists at the Project site. The Project surroundings consist of scattered rural residences, none of which would have to be relocated as a result of the Project. Therefore, no replacement housing would need to be constructed.

The Project would not displace substantial numbers of people because people do not live at the Project site. In addition, sufficient local labor exists to comprise the construction workforce. If the construction workforce needed to be augmented from outside the area, enough vacant housing exists to accommodate the new workers. As of the 2000 Census, the North Antelope Valley area, which includes the Project site and Lancaster but not Palmdale and Rosamond, had 53,670 total housing units. Of these housing units, 4,713 were vacant, of which 1,654 were available for rent. Palmdale had 2,811 vacant units, 1,059 of which were available for rent; Rosamond had 609 vacant units, 323 of which were available for rent.

Project construction and operation would not displace substantial numbers of people or housing and therefore impacts would be less than significant.

d. Could the project result in substantial job/housing imbalance or substantial increase in Vehicle Miles Traveled (VMT)?

The Project would not contribute to a job/housing imbalance. During Project operation, one to two staff would be onsite daily. During the project construction period, staff would be drawn from the local labor pool. Because sufficient local labor is available to work on the Project, it is unlikely that a substantial number of workers would come from outside the area. However, if that were necessary, sufficient vacant

housing exists to accommodate the workers. Therefore, an imbalance between the number of jobs and available housing would not arise as a result of the Project.

The Project would not cause a substantial increase in VMT. The VMT for Los Angeles County in 2009 was 39,159 million on state highways (Caltrans, 2010). Because sufficient workforce exists within 25 miles of the Project area, VMT associated with the Project would not exceed 2.6 million for the equivalent time period, assuming a maximum commute distance (25 miles) for each of the 200 construction workers. The actual VMT is likely to be lower because some of the workers would have shorter commutes. Therefore, the Project would not cause a substantial increase in VMT.

Project construction and operation would not result in a job/housing imbalance or a substantial increase in VMT; therefore, impacts would be less than significant.

e. Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

As described in c. above, the Project is proposed in a rural area of the Antelope Valley and would not displace any people. The Project site is contains no inhabited residential structures. Therefore, there would be no impact.

f. Could the project require new or expanded recreational facilities for future residents?

And

g. 1. *Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?*

2. *Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?*

As noted above, sufficient local labor is available to work on the Project and therefore it is unlikely that a substantial number of workers would come from outside the area for construction of the facility. Operation would only require one to two staff, having a negligible effect. Two major state parks (Arthur B. Ripley Woodland and Antelope Poppy Preserve) are within 10 miles of the Project site. These facilities would provide adequate recreational opportunities for the construction and operations work force. Impacts would be less than significant.

Mitigation and Residual Impact

None proposed.

Cumulative Impact

The potential for cumulative population, housing, and recreational impacts exists where multiple projects in an area have overlapping construction or operational schedules. Projects with overlapping construction or operational schedules could collectively result in a demand for labor that cannot be met by the local labor pool. The 200 to 240 persons estimated for the Project could easily be accommodated by the total available construction workforce in the Los Angeles and Kern County areas. However, out of the other potential cumulative projects listed in Appendix A and shown on Figure CUMULATIVE-1, the AV Solar Ranch One project, proposed 3 miles east of the Project site, would require an estimated construction workforce of 285 per day or 490 workers per day on an accelerated schedule (Los Angeles County, 2009). If the construction schedule of the Project coincides with that of AV Solar Ranch One, and other local projects, some additional construction workers from outside the local area may be required for periods

of time. However, the cumulative impact that will result from the combination of the Project's incremental impact and the effects of other projects is not significant.

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to **population, housing, employment,** or **recreational** factors?

☐ Potentially significant ☐ Less than significant with project mitigation ☒ Less than significant/ No impact

References

California Department of Transportation (Caltrans). 2010. County Vehicle Miles of Travel. Accessed June 15, 2010. http://traffic-counts.dot.ca.gov/

Los Angeles County. 2009. Los Angeles County Department of Regional Planning Notice of Preparation. AV Solar Ranch One Project, County Project NO. R2009-02239. April, 29, 2009.

State of California Employment Development Department (EDD), Los Angeles-Long Beach-Glendale Metropolitan Division. 2010. http://www.calmis.ca.gov/file/lfmonth/la$pds.pdf. May 21.

U.S. Bureau of Labor Statistics. Unemployment Rates for States. Last revised May 21, 2010. http://www.bls.gov/web/laus/laumstrk.htm

U.S. Census Bureau. 2000. Census 2000 Summary File 1 (SF 1) - Sample Data and Census 2000 Summary File 3 (SF 3) - Sample Data. Accessed June 12, 2010.

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U.S. Census Bureau. 2010b. State and County Quickfacts. Palmdale, California. Last revised Thursday, 22-Apr-2010. http://quickfacts.census.gov/qfd/states/06/0655156.html.

MANDATORY FINDINGS OF SIGNIFICANCE

Based on this Initial Study/Mitigated Negative Declaration, the following findings are made:

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☒	☐	Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?
b.	☐	☒	☐	Does the project have possible environmental effects that are individually limited but cumulatively considerable? "Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.
c.	☐	☒	☐	Will the environmental effects of the project cause substantial adverse effects on human beings, either directly or indirectly?

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the environment?

☐ Potentially significant ☒ Less than significant with project mitigation ☐ Less than significant/ No impact

MITIGATION AND MONITORING PROGRAM

The proposed Mitigation and Monitoring Program is included in Appendix K.

Appendix A
Cumulative Projects List

APPENDIX A

TABLE CUMULATIVE-1

Alpine Solar Project Cumulative Projects/Scenarios Considered

Map ID*	Project Type	Project/ Plan Name	Description	Acres	Jurisdiction	Timeframe/ Status	Location	Project/Plan Proponent
Projects Within 5 Miles of AV Solar Ranch One Site								
1	Recreation/ commercial	Fairmont Butte Motorsports Park Project	Motor recreational (racetrack) facility encompassing 320 acres. Facility includes 186,808 sf of appurtenant facilities, such as an administration building, servicing units, two caretaker houses, a restaurant, and garages.	320	Los Angeles County	Pending.	Located approximately 0.5 mile east of Project site; bounded by SR-138 to the north, 155th Street West to the west, 150th Street West to the east, and open space to the south.	Unspecified
2	Public services	Antelope Valley Water Bank Project	Project to develop facilities to recharge and store imported surface water beneath properties in the Antelope Valley. Project area spans approximately 13,440 acres and requires construction of wells, facilities, and accessory structures for water transportation.	13,440	Kern County	Project approved 2006.	Area proposed for recharge and recovery facilities is bounded by Rosamond Blvd. to the north, Avenue A to the south, 170th Street West to the west, and 100th Street West to the east.	Western Development and Storage, LLC
3	Energy	Tehachapi Renewable Transmission Project	Proposed transmission system improvements to deliver electricity from renewable energy projects in Kern County to the Los Angeles Basin.	--	CPUC	DEIR/S issued Feb. 2009; construction anticipated in 2009 and ending in 2013.	Project area traverses portions of Kern, Los Angeles, Riverside, and San Bernardino counties and the ANF.	Southern California Edison

APPENDIX A

TABLE CUMULATIVE-1

Alpine Solar Project Cumulative Projects/Scenarios Considered

Map ID*	Project Type	Project/ Plan Name	Description	Acres	Jurisdiction	Timeframe/ Status	Location	Project/Plan Proponent
11	Renewable energy	Pacific Wind Energy Project	Proposed wind energy facility to generate up to 250 MW, with proposed interconnection into Whirlwind Substation.	8,300	Kern County	NOP issued September 30, 2009.	Project site is generally bound on the north and west by the Tehachapi Mountains, to the south by Patterson Road, and to the east by 160th Street West.	enXco Development Corporation
	Renewable energy	Wildflower Green Energy Farm	Proposed wind and solar energy facility to generate up to 239 MW of electricity.	2,300	LA County	Application submitted to LA County on August 9, 2010.	Near the intersection of Lancaster Road and 170 Street, directly West of the Antelope Valley California Poppy Reserve.	Element Power US, LLC.
4	Large-scale planned community	Willow Springs Specific Plan	Specific plan for mixed use development in Kern County.	--	Kern County	Residential housing subdivision approved as part of specific plan.	South Kern County, from Avenue A to Dawn Road and from 50th Street West to 190th Street West.	Kern County
6	Transportation	North County Highway Corridor Plan	Proposed regional transportation plan to expand SR-138 into a 6-lane expressway and to improve corridor integration on I-5 and SR-14.	Across 250 miles	California Department of Transportation	Improvements to I-5 and SR-14 expected around 2020 and 2025; SR-138 expansion to be implemented after 2030.	North Los Angeles County.	Multiple local and state agencies

APPENDIX A

TABLE CUMULATIVE-1

Alpine Solar Project Cumulative Projects/Scenarios Considered

Map ID*	Project Type	Project/ Plan Name	Description	Acres	Jurisdiction	Timeframe/ Status	Location	Project/Plan Proponent
City of Lancaster								
5	Infill/ redevelopment	Proposed developments in redevelopment areas	Development summary consists of a total of 11,630 residential units; 385 acres of public facilities; 379 acres of commercial development, 163 acres of industrial development, and 17 acres of mixed uses.	--	City of Lancaster	Development Summary Report (current as of July 2009).	City of Lancaster, within redevelopment areas: Residential Project Area; Central Business District, Fox Field Project Area; Amargosa Project Area; and Project Areas 5, 6, and 7.	Various
5, 10	Infill	Proposed developments (excludes redevelopment areas)	Development summary indicates a total of 11,279 residential units; 73 acres of public facilities; 134 acres of commercial development, 104 acres of industrial development, and 73 acres of mixed uses. Infill development includes the Sierra Demonstration Plant (Map ID #10), which is a solar thermal test site occupying 95 acres in the City of Lancaster. The facility can generate a maximum of 7.5 MW and has been operating since 2009.	--	City of Lancaster	Development Summary Report (current as of July 2009).	City of Lancaster, outside redevelopment areas.	Various

APPENDIX A

TABLE CUMULATIVE-1

Alpine Solar Project Cumulative Projects/Scenarios Considered

Map ID*	Project Type	Project/ Plan Name	Description	Acres	Jurisdiction	Timeframe/ Status	Location	Project/Plan Proponent
7	Transportation	California High Speed Rail	Proposes 800-mile statewide high-speed train system from Sacramento to San Diego.	--	California Department of Transportation	Construction of Southern CA segment is proposed to begin as early as 2011.	A portion of the Southern California route would traverse the Cities of Lancaster and Palmdale about 15 miles east of the Project site.	California High-Speed Rail Authority
Centennial Specific Plan								
8	Master planned community	Centennial Specific Plan	Master Plan Community of up to 23,000 dwelling units, and 14 million total sf of non-residential development, including commercial facilities, three schools, one golf course, open space areas, and roads.	12,000	Los Angeles County	EIR NOP issued March 2004; Project build-out over 20 years.	Northwestern portion of the Antelope Valley, 1 mile east of I-5 and immediately adjacent to the north and south of SR-138.	Centennial Founders, LLC
Community of Gorman								
9	Large-scale planned community	Gorman Post Ranch	Residential development consisting of 533 single family units on 2,725.38 acres.	2,725	County of Los Angeles	NOP issued 1/10/07; EIR in progress.	Northwestern corner of unincorporated Los Angeles County just south of Kern County. The site is located on Gorman Post Road between Gorman School Road and Lancaster Road (SR-138), just northeast of I-5 and southeast of Gorman.	Gorman Post Ranch, LLC

APPENDIX A

TABLE CUMULATIVE-1

Alpine Solar Project Cumulative Projects/Scenarios Considered

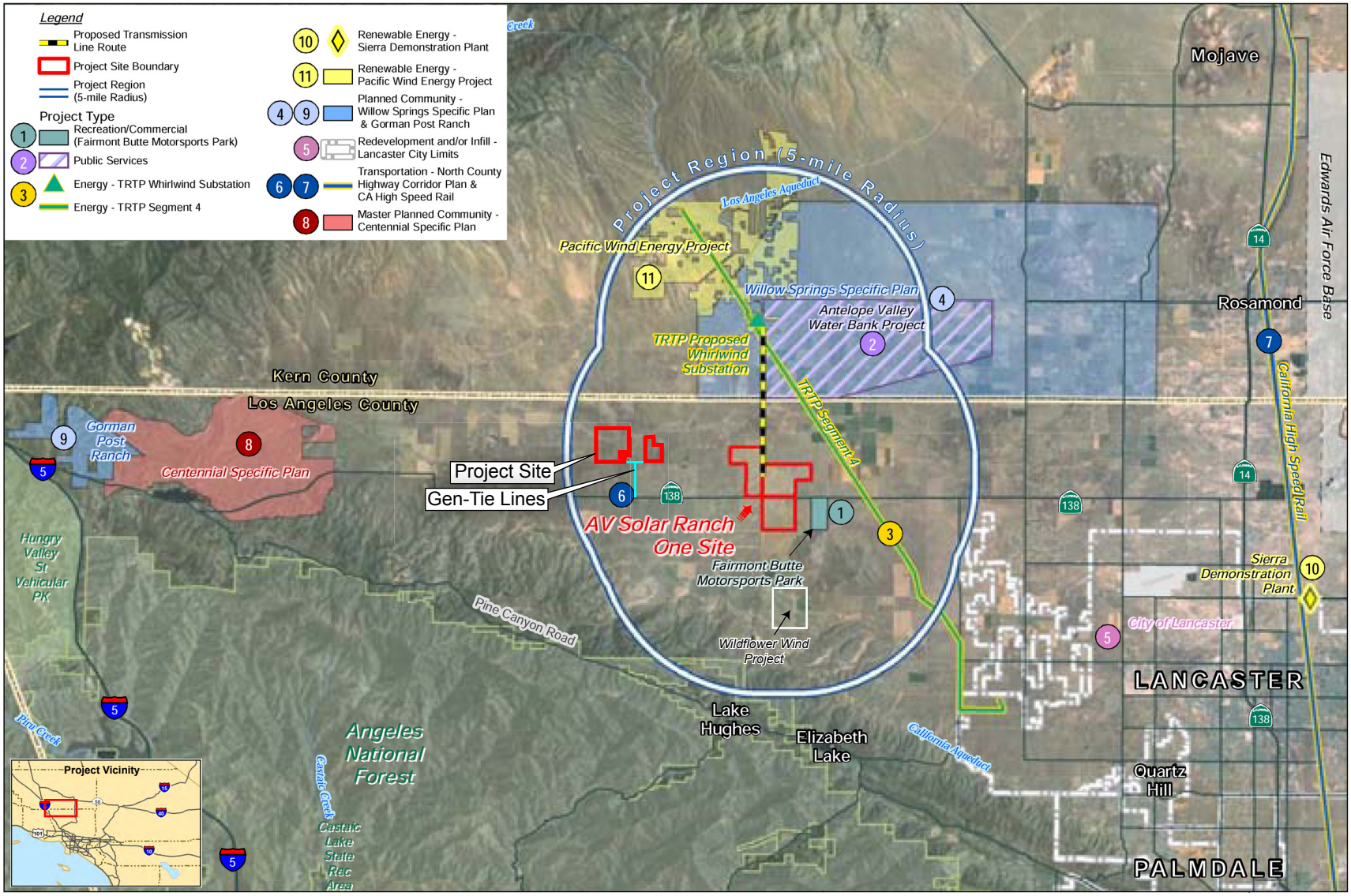
Map ID*	Project Type	Project/ Plan Name	Description	Acres	Jurisdiction	Timeframe/ Status	Location	Project/Plan Proponent
CAISO Interconnection Queue								
--	Renewable energy	Solar PV electric generation facility	Proposed solar PV electric generation project with a maximum capacity of 211.76 MW. Proposed interconnection into the planned SCE Whirlwind Substation.	--	Kern County	Current anticipated online date: December 2011.	Location unspecified in Kern County. Project not identified within 5 miles of the proposed AV Solar Ranch One Project site.	Unspecified
--	Renewable energy	Solar thermal electric generation facility	Proposed solar thermal generation project with a maximum capacity of 231 MW. Proposed interconnection into the SCE Antelope-Magunden 230-kV transmission line.	--	California Energy Commission	Authority to Construct not filed; anticipated online date: April 2011.	Kern County, location unspecified.	Unspecified
--	Renewable energy	Solar thermal electric generation facility	Proposed solar thermal generation project with a maximum capacity of 420 MW. Proposed interconnection into the planned SCE Whirlwind Substation.	--	California Energy Commission	Authority to Construct not filed; anticipated online date: October 2013.	Los Angeles County, location unspecified.	Unspecified
--	Renewable energy	Wind electric generation facility	Proposed wind generation project with a maximum capacity of 100 MW. Proposed interconnection into the planned SCE Whirlwind Substation.	--	Kern County	Current anticipated online date: December 2012.	Location unspecified in Kern County. Project not identified within 5 miles of the proposed AV Solar Ranch One Project site.	Unspecified

APPENDIX A

TABLE CUMULATIVE-1
Alpine Solar Project Cumulative Projects/Scenarios Considered

Map ID*	Project Type	Project/ Plan Name	Description	Acres	Jurisdiction	Timeframe/ Status	Location	Project/Plan Proponent
--	Renewable energy	Wind electric generation facility	Proposed wind generation project with a maximum capacity of 160 MW. Proposed interconnection into the planned SCE Whirlwind Substation.	--	Kern County	Current anticipated online date: December 2013.	Location unspecified in Kern County. Project not identified within 5 miles of the proposed AV Solar Ranch One Project site.	Unspecified
--	Renewable energy	Wind electric generation facility	Proposed wind generation project with a maximum capacity of 250 MW. Proposed interconnection into the planned SCE Whirlwind Substation.	--	Kern County	Current anticipated online date: December 2010.	Location unspecified in Kern County. Project not identified within 5 miles of the proposed AV Solar Ranch One Project site.	Unspecified
--	Renewable energy	Wind electric generation facility	Proposed wind generation project with a maximum capacity of 340 MW. Proposed interconnection into the planned SCE Whirlwind Substation.	--	Kern County	Current anticipated online date: December 2011.	Location unspecified in Kern County. Project not identified within 5 miles of the proposed AV Solar Ranch One Project site.	Unspecified
--	Renewable energy	Wind electric generation facility	Proposed wind generation project with a maximum capacity of 500 MW. Proposed interconnection into the planned SCE Whirlwind Substation.	--	Kern County	Current anticipated online date: December 2014.	Location unspecified in Kern County. Project not identified within 5 miles of the proposed AV Solar Ranch One Project site.	Unspecified

*Cumulative Projects List derived from the AV Solar Ranch One EIR, County of Los Angeles, 2010.
Notes:
DEIR/S = draft environmental impact report/statement
PV = photovoltaic
sf = square feet



N

0 1 2 3 4 5 Miles

Source:
[1] I-cubed Nationwide Prime - Aerials Express (2007-02-15 image date, 0.3m resolution), [2] LA Dept. of Regional Planning, [3] USFS Region 5, [4] ESRI StreetMap USA (2006).

Figure CUMULATIVE-1
Cumulative Projects
Alpine Solar Project
July 2010

CH2MHILL

Appendix B
Geological and Geotechnical Engineering Report

GEOLOGIC AND GEOTECHNICAL ENGINEERING REPORT,
PROPOSED ALTA VISTA SOLAR POWER PLANT,
Northwest Corner of 210th Street and Avenue C,
Los Angeles County, California

for

eSolar

August 21, 2008 W.O. 6160

MDN 11348

GeoSoils Consultants Inc.

GeoSoils Consultants Inc.
GEOTECHNICAL · GEOLOGIC · ENVIRONMENTAL

August 21, 2008
W.O. 6160

eSOLAR
130 West Union Street
Pasadena, California 91103

Attention: Mr. Michael Bass

Subject: Geologic and Geotechnical Engineering Report, Proposed Alta Vista Solar Power Plant, Northwest Corner of 210th Street and Avenue C, Los Angeles County, California

Dear Mr. Bass:

INTRODUCTION

At your request, GeoSoils Consultants, Inc. (GSC) has prepared this geologic and geotechnical engineering report for the proposed solar power plant at the subject site. The purpose of this report is to provide preliminary geologic background of the site vicinity and general geotechnical engineering characteristics of the underlying earth materials in order to evaluate their suitability to receive a proposed solar power plant facility.

The site was explored by excavating two locations using an eight-inch diameter hollow-stem auger drill rig. The field exploration procedures, laboratory test procedures and results are enclosed in Appendix A. The geologic site conditions are shown on the Geologic Map, Plate 1 This report has been prepared in accordance with generally accepted geotechnical engineering and geologic practices.

MDN 11348

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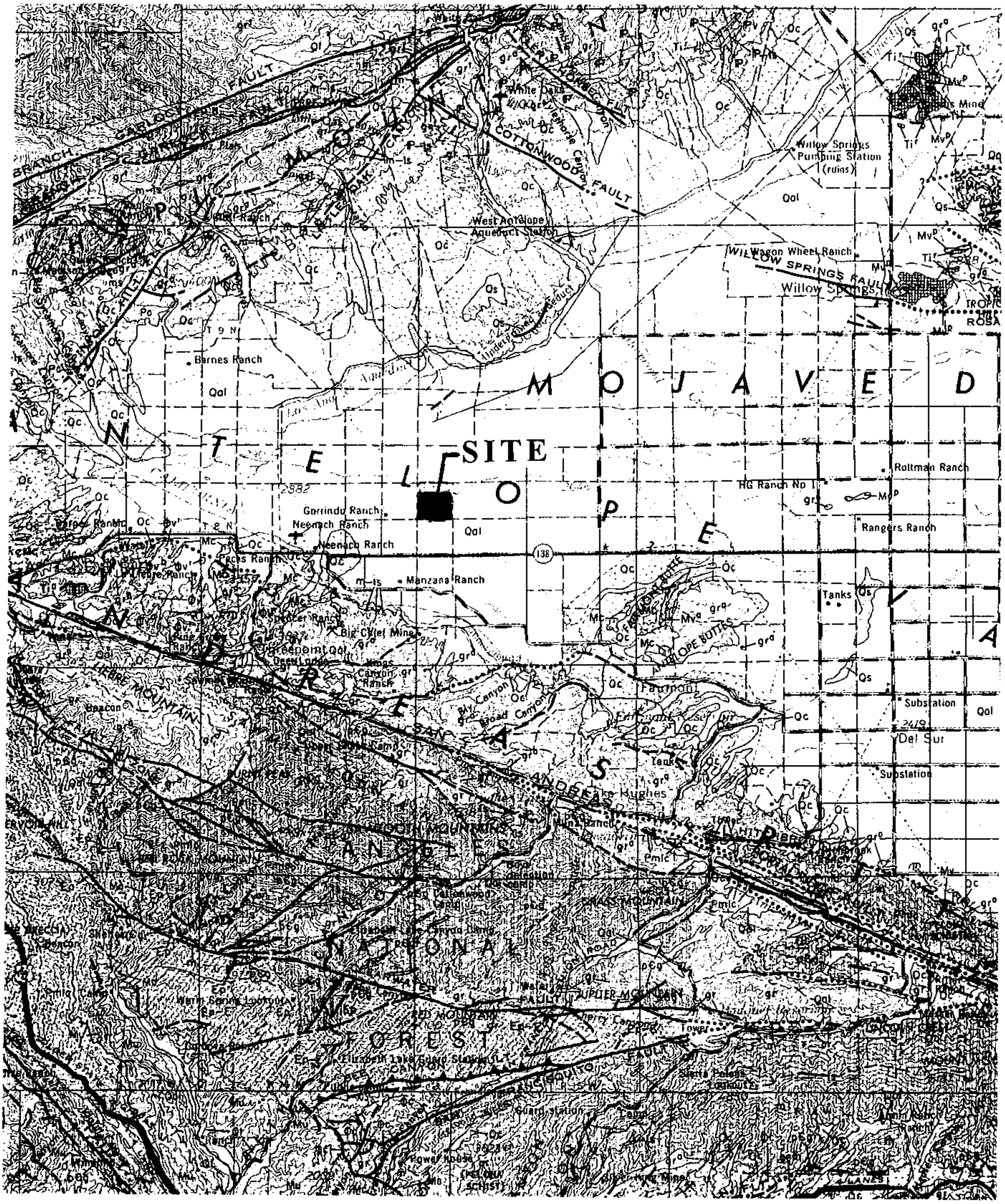
SITE LOCATION AND DESCRIPTION

The site is located in northwestern Los Angeles County, one mile north of Highway 138 (Avenue D) and one mile south of the Kern County line. The site is bounded by Avenue C to the south, 220th Street to the west, 210th Street to the east and a deeply incised natural drainage course to the north. The Assessor's Parcel Numbers (APN's) are as follows: 3256-015-005, -006, -007, -008, -009, -010, -011, -013, -014, -015, -016 and 017. Rectangular in shape, the site occupies approximately 480 acres of planar property that is currently used for agriculture. Irrigation ditches surround the fields limiting access to a single dirt road that is generally coincident with Avenue B-8 indicated on local maps, which traverses east west through the northern portion of the site. A Site Location Map is provided as Figure 1.

PROPOSED PROJECT

The Alta Vista Solar Generating Station ("The Project") includes construction of a 66 megawatt (mw) solar power generating facility. The Project will consist of two, 33 mw units each consisting of 156,000 heliostats and 16, 180-foot tall tower-mounted receivers. Ground-mounted heliostats will be constructed to focus the sun's energy on a water/steam receiver mounted on a tower. Thirty-two towers are proposed for this facility with each tower being approximately 180 feet tall.

Each tower-mounted receiver is supplied solar energy by two fields of heliostats, one to the north and one to the south. Each field contains approximately 78,000 1.2 square meter mirrors mounted on the heliostats. Energy absorbed into the receivers is collected in a header or accumulator and directed to a steam turbine generator. Nominal steam conditions at the turbine inlet are 600 psi, 800 degrees Fahrenheit. Turbine exhaust will be cooled by an air cooled condenser and modern modular cooling tower.



GeoSoils Consultants Inc. GEOTECHNICAL · GEOLOGIC · ENVIRONMENTAL	**SITE LOCATION MAP** **Alta Vista Suntower** **ESOLAR**
	DATE June 2008 W.O. NO. 6160
	Geotechnical • Geologic • Environmental **Figure 1**

In addition to the solar fields, the proposed facility would have a workshop/bulk storage area, a substation (size to be determined), a generator building (size to be determined) and employee and visitor parking.

Detailed plans are not available at this time; however, we anticipate that some grading will be required and the supporting foundations will be conventional.

SITE CONDITIONS

Geologic Setting

The site is located in the western portion of the Mojave Desert Geomorphic Province of California, which is characterized by high desert plains and hills (elevation ranges from 2000 to 4000 feet). Situated between the San Andreas Fault to the southwest, the Garlock Fault to the northwest and Barstow to the east; the geomorphology of the western Mojave Desert consists of gently to moderately sloping pediments and alluvial fans with scattered low mountains. The predominant stresses in the region subject the western Mojave Desert to clockwise rotational forces due to the relative motion of the right-lateral San Andreas Fault and the left-lateral Garlock Fault. These forces, due to the convergence of the North American and Pacific Tectonic Plates, has facilitated the uplifting, faulting and volcanic processes that originally formed the unique features of the area. However, fluvial erosion and deposition and eolian deflation and deposition are the primary geomorphic processes now. Average precipitation is about 4 to 10 inches per year.

The Antelope Valley occupies much of the western Mojave Desert, which is largely a depressed basin area, filled with Quaternary alluvial sediments that extend several thousand feet in depth. The geologic structure within isolated bedrock outcrops within the alluvial valley, for example Antelope Buttes, Little Buttes and Willow Springs Mountain; indicate the presence of an uplifted anticline that plunges toward the northeast (Dibblee, 1963). The bedrock exposed within the

isolated hills consists of fanglomerate, tuff and quartz monzonite. The nearest bedrock outcrop to the site is Antelope Buttes located approximately 6 miles to the southeast.

Earth Units

Quaternary alluvium (Qal) underlies the site and vicinity. The alluvium was explored to a depth of 51.5 feet and consists of brown, silty, fine sands and gray-brown, sandy silts that are moist, loose to soft in the upper five feet and moderately dense to dense below five feet.

Surface and Subsurface Water

Surface water is limited to precipitation falling directly on the site and irrigation. No ground water or seepage was observed in the excavations. Review of published literature on the western Mojave Desert area indicates that groundwater is approximately 270 feet below ground surface (bgs).

FAULTING AND SEISMICITY

General

The site is not within an Alquist-Priolo Earthquake Fault Zone. There are no known active or potentially active faults on or adjacent to the property. An active fault is any fault that has experienced any movement within the last 11,000 years. A potentially active fault is any fault that has displayed movement within the last 1.6 million years but activity in the last 11,000 years cannot be demonstrated.

However, the property, as is common with other sites in Southern California, has experienced earthquake-induced ground shaking in the past and can be expected to experience further shaking in the future. There are some faults in close enough proximity to the property to cause moderate to intense ground shaking during the lifetime of the property (for example the San Andreas Fault is located 6.3 miles to the southwest and the Garlock Fault is located 12.2 miles to the west). Earthquake resistant design is recommended.

The 2006 International Building Code (IBC) Seismic Design Criteria

Following are the seismic design criteria for the site based on the 2006 International Building Code (IBC), Section 1613:

2006 IBC Section 1613, Earthquake Loads	
Site Class Definition (Table 1613.5.2)	D
Mapped Spectral Response Acceleration Parameter, S_s (Figure 1613.5(3) for 0.2 second)	1.500
Mapped Spectral Response Acceleration Parameter, S_1 (Figure 1613.5(4) for 1.0 second)	0.663
Site Coefficient, F_a (Table 1613.5.3(1) short period)	1.0
Site Coefficient, F_v (Table 1613.5.3(2) 1-second period)	1.5
Adjusted Maximum Considered Earthquake Spectral Response Acceleration Parameter S_{MS} (Eq. 16-37)	1.500
Adjusted Maximum Considered Earthquake Spectral Response Acceleration Parameter S_{M1} (Eq. 16-38)	0.994
Design Spectral Response Acceleration Parameter, S_{DS} (Eq. 16-39)	1.000
Design Spectral Response Acceleration Parameter, S_{D1} (Eq. 16-40)	0.663

Notes:
1. Site location: latitude = 34.7948, longitude = -118.5102
2. Site Class Designation: Class D is recommended based on subsurface condition.
3. Ss, SMs, and SDs are spectral response accelerations for the period of 0.2 second.
4. S1, SM1, and SD1 are spectral response accelerations for the period of 1.0 second.

Conformance to the above criteria for seismic design does not constitute any guarantee or assurance that significant structural damage or ground failure will not occur if a maximum level earthquake occurs. The primary goal of seismic design is to protect life and not to avoid all damage, since such design may be economically prohibitive.

Secondary Earthquake Effects

Ground Rupture

Ground rupture occurs when movement on a fault breaks through to the surface. Surface rupture usually occurs along preexisting fault traces where zones of weakness already exist. The State has established Earthquake Fault Zones for the purpose of mitigating the hazard of fault rupture by prohibiting the location of most human occupancy structures across the traces of active faults. Earthquake fault zones are regulatory zones that encompass surface traces of active faults with a potential for future surface fault rupture. Since the site is not located within a State established Earthquake Fault Zone, the ground rupture hazard for the site is considered to be low.

Landsliding

Earthquake-induced landsliding often occurs in areas where previous landslides have moved and in areas where the topographic, geologic, geotechnical and subsurface ground water conditions are conducive to permanent ground displacements. The site is not located in an area defined by the State for earthquake-induced landslides due to the lack of hillside terrain. Therefore, the potential for earthquake-induced landsliding is considered to be low.

Seiches and Tsunamis

A seiche is the resonant oscillation of a body of water, typically a lake or swimming pool caused by earthquake shaking (waves). The hazard exists where water can be splashed out of the body of water and impacting nearby structures. No bodies of water are near the site, therefore, the hazards associated with seiches are considered low.

Tsunamis are seismic sea waves generated by undersea earthquakes or landslides. When the ocean floor is offset or tilted during an earthquake, a set of waves is generated similar to the concentric waves caused by an object dropped in water. Tsunamis can have wavelengths of up to 120 miles and travel as fast as 500 miles per hour across hundreds of miles of deep-ocean. Upon reaching shallow coastal waters, the once two-foot high wave can become up to 50 feet in height causing great devastation to structures within reach. Tsunamis can generate seiches as well. Since the site is not located near the shoreline or within fifty feet of sea level, the tsunami hazard is considered low.

Liquefaction

Liquefaction describes a phenomenon where cyclic stresses, which are produced by earthquake-induced ground motions, create excess pore pressures in cohesionless soils. As a result, the soils may acquire a high degree of mobility, which can lead to lateral spreading, consolidation and settlement of loose sediments, ground oscillation, flow failure, loss of bearing strength, ground fissuring, and sand boils, but after liquefaction has developed, it can propagate upward into overlying, non-saturated soil as excess pore water escapes. Research has shown that saturated, loose sands with silt content less than about 25 percent are most susceptible to liquefaction, whereas other soil types are generally considered to have a low susceptibility. Liquefaction susceptibility is related to numerous factors, and the following conditions must exist for liquefaction to occur:

- Sediments must be relatively young in age and must not have developed large amounts of cementation;
- Sediments must consist mainly of cohesionless sands and silts;
- The sediment must not have a high relative density;
- Free groundwater must exist in the sediment; and
- The site must be exposed to seismic events of a magnitude large enough to induce straining of soil particles.

The State has not evaluated the area containing the site. However, groundwater is anticipated to be greater than 50 feet deep; therefore, the site is not anticipated to be conducive to the liquefaction phenomenon.

Ground Lurching

Ground lurching is defined as earthquake motion at right angles to a cliff or bluff, or more commonly to a stream bank or artificial embankment that results in yielding or material in the direction in which it is unsupported. The initial effect is to produce a series of more or less parallel cracks separating the ground into rough blocks. These cracks are generally parallel with the top of the slope or embankment. There are no cliffs or embankments conducive to the ground lurch phenomenon; therefore, the ground lurch hazard is considered low.

CONCLUSIONS

The construction of the proposed solar power plant is feasible from a geologic and geotechnical engineering viewpoint.

No active faults traverse the site; therefore, site-specific seismic studies will not be required.

Groundwater is not within 50 feet of the ground surface and historic high groundwater is not known to be within 50 feet of the ground surface; therefore, potential for liquefaction is considered low.

Additional field investigations and laboratory testing of underlying materials will be performed once development plans are completed and the proposed structure locations are known.

RECOMMENDATIONS

Grading

General Grading Guidelines are presented in Appendix C for your consideration. These recommendations should be incorporated into the development plans, where applicable.

Since grading will likely be confined to overexcavation and recompaction of the surface materials (less than ten feet deep), foundation systems are anticipated to be conventional and shallow.

Conventional Foundations

The on-site earth materials are anticipated to have a medium expansion index. The following foundation criteria may be considered:

1. An allowable soil bearing pressure of 1500 pounds per square foot, including dead and real live loads, can be utilized for design of conventional spread footings in the compacted fill. The above bearing value may be increased by one-third when considering short duration seismic or wind loads. Footings are recommended to be continuous and should have a minimum width of 16 inches and a minimum embedment depth of 18 inches into the recommended bearing material.

   The above bearing value may also be increased by the following percentage to a maximum allowable bearing value of 2,500 pounds per square foot for compacted fill.

   a) 20 percent increase for each additional foot below the minimum recommended depth, plus

   b) 10 percent increase for each additional foot wider than the minimum recommended width.

2. A friction coefficient for concrete on compacted soil of 0.4 and a lateral bearing value of 250 pounds per square foot, per foot of depth, may be employed to resist lateral loads. When combining passive pressure and frictional resistance, the passive pressure component should be reduced by one-third. For design of isolated poles, the allowable passive pressure may be increased by 100 percent.

3. Prior to concrete placement in the footing excavations, an observation should be made by our representative to ensure that the footings are free of loose and disturbed soils, and are embedded in the recommended material.

4. Due to medium expansion potential, presaturation may be required prior to placement of concrete.

Solar Tower Foundations

If monopole solar towers are proposed, they can be supported by mat foundations capable of withstanding base reaction in terms of overturning moments caused due to extreme wind loads and horizontal shear caused by extreme seismic loads. Foundations should be checked against undue settlement from the applied dead plus live loads.

Wind and seismic loads should be computed in accordance with CBC 2007 and ASCE 7-05. Structural design should also consider the maximum tower deflection and tensile strength of anchor bolts and base flanges. High compressive strength concrete (over 4,500 pounds per square inch) and high compressive strength non-shrink grout must be utilized.

Specific design recommendations will be provided after site-specific subsurface and laboratory testing on on-site soils.

Slab-On-Grade

Any proposed slabs should be designed for a minimum four-inch thickness, reinforced with No. 4 rebar at 16 inches on-center in both directions. All steel reinforcement should be placed mid-height in the slab. The slab should be underlain by six mil Visqueen vapor barrier, sandwiched between two, two-inch layers of sand.

REVIEW AND INSPECTION

The site foundation and grading plans, including foundation-loading details should be forwarded to the Geotechnical Engineer for review and approval prior to finalizing design. It is also recommended that the Geotechnical Engineer inspect all grading and footing excavations.

CLOSURE

We appreciate this opportunity to be of service on this project. If you have any questions regarding the content of this report or any other aspects of the project, please do not hesitate to contact us.

Respectfully submitted,

GEOSOILS CONSULTANTS, INC.

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Encl: References
Plate 1, Geologic Map
Appendix A, Field Exploration and Laboratory Testing
Plates A-1 through A-4, Boring Logs
Plates SH-1 and SH-2, Shear Test Diagrams
Plates C-1 and C-2, Consolidation Diagrams
Plates G-1 and G-2, Gradation Diagrams
Plate CAS-1, Sulfate Test Results
Appendix B, Agricultural Soils Review
Appendix C, General Grading Guidelines

cc: (5) Addressee

MDN 11348

REFERENCES

1. California Code of Regulations, Title 14, Article 10, Section 3721, Seismic Hazards Mapping, Division of Mines and Geology.

2. California Department of Conservation dated 1997, "Guidelines for evaluating and Mitigating Seismic Hazards in California, Special Publication 117, Division of Mines and Geology".

3. California Department of Conservation dated 1969, "Geologic Map of California, Los Angeles Sheet: Division of Mines and Geology, Scale 1:250,000.

4. Dibblee, Thomas W., Jr., 1992, Geologic Map of the Topanga and Canoga Park (South ½) Quadrangles, Los Angeles County, California: Dibblee Geological Foundation Map #DF-35.

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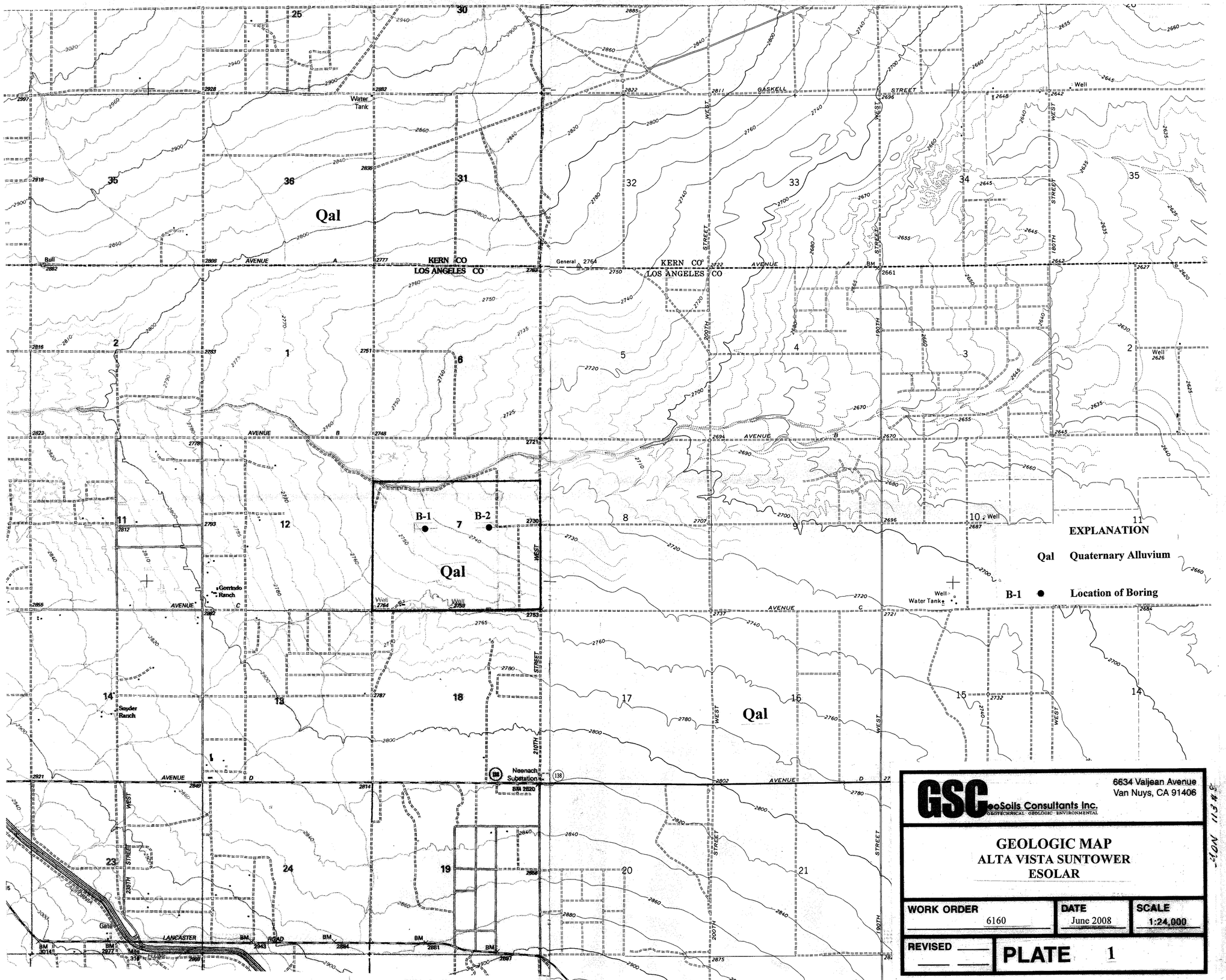
9. Ponti, D.J., D.B. Burke and C.W. Hedel, 1981, Map showing Quaternary Geology of the Central Antelope Valley and Vicinity, California: USGS Open-File-Report OFR 81-737.

10. U.S.D.A. Soil Conservation Service, 1970, "Soil Survey, Antelope Valley Area, California."

11. United States Geological Survey, 1995, Neenach School Quadrangle, California, 7 ½ - Minute Series (Topographic), Scale 1:24,000.



GSC GeoSoils Consultants Inc.
GEOTECHNICAL · GEOLOGIC · ENVIRONMENTAL

6634 Valjean Avenue
Van Nuys, CA 91406

GEOLOGIC MAP
ALTA VISTA SUNTOWER
ESOLAR

WORK ORDER	DATE	SCALE
6160	June 2008	1:24,000

REVISED

PLATE 1

August 21, 2008
W.O. 6160

APPENDIX A

FIELD EXPLORATION AND LABORATORY TESTING

APPENDIX A

FIELD EXPLORATION AND LABORATORY TESTING

Two borings explored subsurface conditions using an 8-inch diameter hollow-stem auger drill rig to a maximum depth of 51.5 feet. The locations of the subsurface explorations are shown on the Geologic Map, Plate 1. The borings were continuously logged and classified by one of our geologists by visual examination in accordance with the Unified Soil Classification System. The boring logs are included as Plates A-1 through A-4. Undisturbed soil samples were collected by driving a ring sampler 12 inches with an automatic, 140-pound hammer. The soil samples were retained in a series of brass rings, each having an inside diameter of 2.36 (6.0 centimeters) and a height of 1.00 inch (2.54 centimeters). The central portions of the samples were retained in close-fitting, moisture-tight containers for shipment to our laboratory.

Moisture-Density

The in-situ moisture content and dry unit weights were determined for each of the undisturbed ring samples. The data obtained are shown on the boring logs.

Compaction Tests

To determine the compaction character of the on-site soils, a compaction test was performed in accordance with ASTM Test Designation D-1557-07. The maximum density and optimum moisture were determined and are summarized below:

Excavation	Description	Maximum Dry Density (pcf)	Optimum Moisture (%)
B-2 @ 0-5'	Brown, sandy, clayey SILT	121.0	12.0

Appendix A

Consolidation Tests

Two consolidation tests were performed on representative ring samples to develop data for settlement studies. These tests were performed on materials susceptible to consolidation under increased loading. Loads were applied to the sample in several geometric increments, and the resulting deformations were recorded at selected time intervals. Saturation of the samples was performed at an approximate load of one ton per square foot. Results of the consolidation tests are shown on Plates C-1 and C-2.

Direct Shear Test

Direct shear tests were performed on undisturbed and remolded (90% of maximum density) samples in a strain-control type Direct Shear Machine. The samples were sheared under varying confining loads in order to determine the Coulomb shear strength parameters, cohesion, and angle of internal friction. The samples were tested in an artificially-saturated condition. The results are plotted on the Shear Test Diagrams included in this appendix as Plates SH-1 and SH-2.

Expansion Index Tests

To determine the expansion characteristics of the on-site soil materials, one Expansion Index Test was performed in accordance with ASTM D-4829. Test results indicate that the near surface soils have an expansion index of 59 and a medium expansion potential.

Grain-Size Analysis

Washed sieve analyses were performed for grain-size determination in accordance with California Test 202.

Appendix A

The grain-size analysis of the minus 200-sieve material was performed for selected samples. The analysis was performed using standard hydrometer methods in accordance with California Test 203.

Graphical grain size distribution curves are shown on Plates G-1 and G-2.

Chemical Tests

One representative sample of the material concentrated within the subject site was tested by Columbia Analytical Services, Inc. for sulfates. Test results are shown on Plate CAS-1 in this appendix.

GEOTECHNICAL BORING LOG

PROJECT NAME eSolar - Alta Vista
W.O. NO. 6160
DRILLING COMPANY Choice Drilling
DATE STARTED: 5-21-08
BORING NO. B-1
TYPE OF DRILL RIG
LOGGED BY SMB
SHEET 1 OF 2
DRILLING METHOD Hollow Stem Auger
HAMMER WEIGHT (LBS) 140
GROUND ELEVATION (FT)
DIAMETER OF HOLE 8
DROP (IN) 30
GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
		5/5/6	**0-51.5', ALLUVIUM (Qal)** @ 0', No recovery.			
		3/6/6	@ 1.5', 7" recovery, brown, silty, fine SAND, moist, loose.			
		5/6/14	@ 3', 12" recovery, brown, silty, fine SAND, moist, moderately dense.	8.9	-----	SIEVE/ HYDRO
5		12/19		9.4	112.0	DS CONS
10		7/10/12	@ 10', Brown to gray-brown, fine, sandy SILT, moist, very stiff.			
15		16/23		13.4	114.6	
20		16/20/29	@ 20', Brown, silty SAND, moist, dense, carbonates.			
25		23/40	@ 25', Gray-brown, fine, sandy SILT, moist, very dense, hard, manganese, iron staining.	9.8	126.4	

LEGEND

- Standard Penetration Test
- California Ring
- Rock Core
- Bulk Sample
- Shelby Tube
- Water Seepage
- Groundwater

SIEVE: GRAIN SIZE ANALYSIS
MAX: MAXIMUM DRY DENSITY
DS: DIRECT SHEAR
CONS: CONSOLIDATION
HYDR: HYDROMETER ANALYSIS
EXPAN: EXPANSION INDEX
CHEM: CHEMICAL TESTS

PLATE A-1

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GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME eSolar - Alta Vista
W.O. NO. 6160
DRILLING COMPANY Choice Drilling
DATE STARTED: 5-21-08
BORING NO. B-1
TYPE OF DRILL RIG
LOGGED BY SMB
SHEET 2 OF 2
DRILLING METHOD Hollow Stem Auger
HAMMER WEIGHT (LBS) 140
GROUND ELEVATION (FT)
DIAMETER OF HOLE 8
DROP (IN) 30
GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
		8/15/28	@ 30', Light brown, silty SAND, moist, dense.			
35		50 for 6"	@ 35', Gray, fine to coarse SAND with gravel, damp, very dense.	3.4	115.6	
40		18/49/43				
45		50 for 5.5"	@ 45', Friable (sample disturbed).	2.1	99.6	
50		9/12/17	@ 50', Olive-green CLAY, moist, very stiff, plastic.			
			T.D. @ 51.5' No groundwater.			
55						

LEGEND

- Standard Penetration Test
- California Ring
- Rock Core
- Bulk Sample
- Shelby Tube
- Water Seepage
- Groundwater

SIEVE: GRAIN SIZE ANALYSIS
MAX: MAXIMUM DRY DENSITY
DS: DIRECT SHEAR
CONS: CONSOLIDATION
HYDR: HYDROMETER ANALYSIS
EXPAN: EXPANSION INDEX
CHEM: CHEMICAL TESTS

PLATE A-2

GeoSoils Consultants, Inc.
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GEOTECHNICAL BORING LOG

PROJECT NAME eSolar - Alta Vista
W.O. NO. 6160
DRILLING COMPANY Choice Drilling
DATE STARTED: 5-21-08
BORING NO. B-2
TYPE OF DRILL RIG
LOGGED BY SMB
SHEET 1 OF 2
DRILLING METHOD Hollow Stem Auger
HAMMER WEIGHT (LBS) 140
GROUND ELEVATION (FT)
DIAMETER OF HOLE 8
DROP (IN) 30
GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
		5/10/11	**0-31.5', ALLUVIUM (Qal)** @ 0', 2" recovery, light brown, very fine, sandy SILT, dry, stiff.			
		6/18/13		6.0	-----	SIEVE/ HYDRO
		8/12/16		5.4	100.4	Remolded Shear
5		21/40				CHEM
10		11/15/22	@ 10', Brown, silty, fine SAND, damp, moderately dense.			
15		18/38	@ 15', Moist, some carbonate, dense.	4.8	111.2	CONS
20		11/17/23	@ 20', Brown, silty, fine to medium SAND, moist, dense.			
25		22/40	@ 25', More silty, iron staining.	6.8	116.8	

LEGEND

- Standard Penetration Test
- California Ring
- Rock Core
- Bulk Sample
- Shelby Tube
- Water Seepage
- Groundwater

SIEVE: GRAIN SIZE ANALYSIS
MAX: MAXIMUM DRY DENSITY
DS: DIRECT SHEAR
CONS: CONSOLIDATION
HYDR: HYDROMETER ANALYSIS
EXPAN: EXPANSION INDEX
CHEM: CHEMICAL TESTS

PLATE A-3

GeoSoils Consultants, Inc.
GEOTECHNICAL ★ GEOLOGIC ★ ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME eSolar - Alta Vista
W.O. NO. 6160
DRILLING COMPANY Choice Drilling
DATE STARTED: 5-21-08
BORING NO. B-2
TYPE OF DRILL RIG
LOGGED BY SMB
SHEET 2 OF 2
DRILLING METHOD Hollow Stem Auger
HAMMER WEIGHT (LBS) 140
GROUND ELEVATION (FT)
DIAMETER OF HOLE 8
DROP (IN) 30
GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
		8/11/17	@ 30', Gray-brown, silty, fine to coarse SAND, moist, moderately dense.			
			T.D. @ 31.5' No groundwater.			
35						
40						
45						
50						
55						

LEGEND

- Standard Penetration Test
- California Ring
- Rock Core
- Bulk Sample
- Shelby Tube
- Water Seepage
- Groundwater

SIEVE: GRAIN SIZE ANALYSIS
MAX: MAXIMUM DRY DENSITY
DS: DIRECT SHEAR
CONS: CONSOLIDATION
HYDR: HYDROMETER ANALYSIS
EXPAN: EXPANSION INDEX
CHEM: CHEMICAL TESTS

PLATE A-4

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eSolar, Alta Vista
W.O.: 6160

Date of Test: 6/08

Sample: **B-1 @ 5.0'**

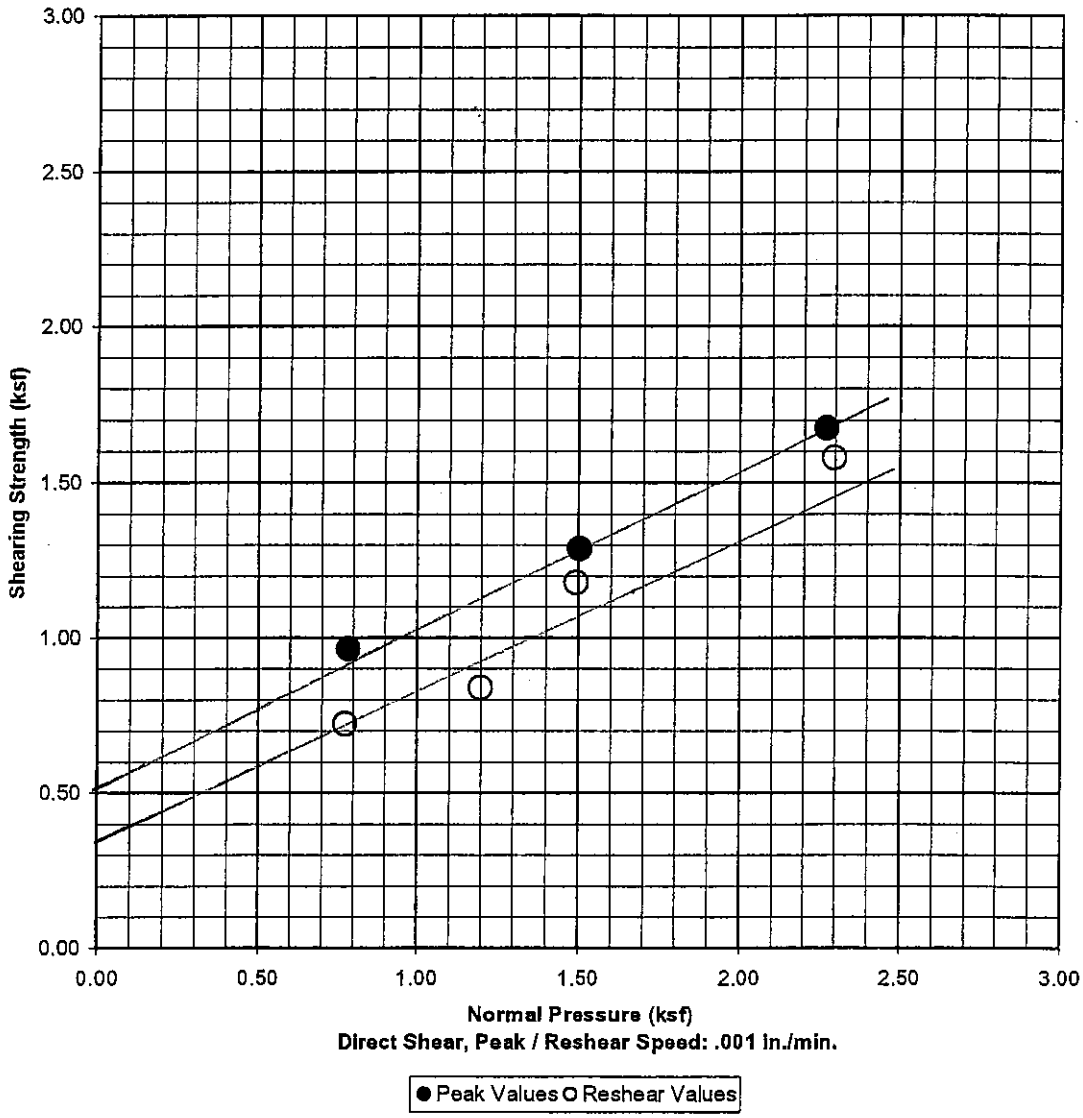
GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

PLATE SH-1

Shear Test Diagram
Peak
C(psf): 520 Phi (degrees): 26.0

Reshear
C(psf): 350 Phi (degrees): 25.0



Undisturbed **Natural** Shear-Saturated

Brown, silty, very fine SAND.

18.5% Saturated Moisture Content

E Solar - Alta vista
W.O.: 6160

Date of Test: 6/08

Sample: **B-2 @ 0.0' 5.0'**

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

PLATE SH-2

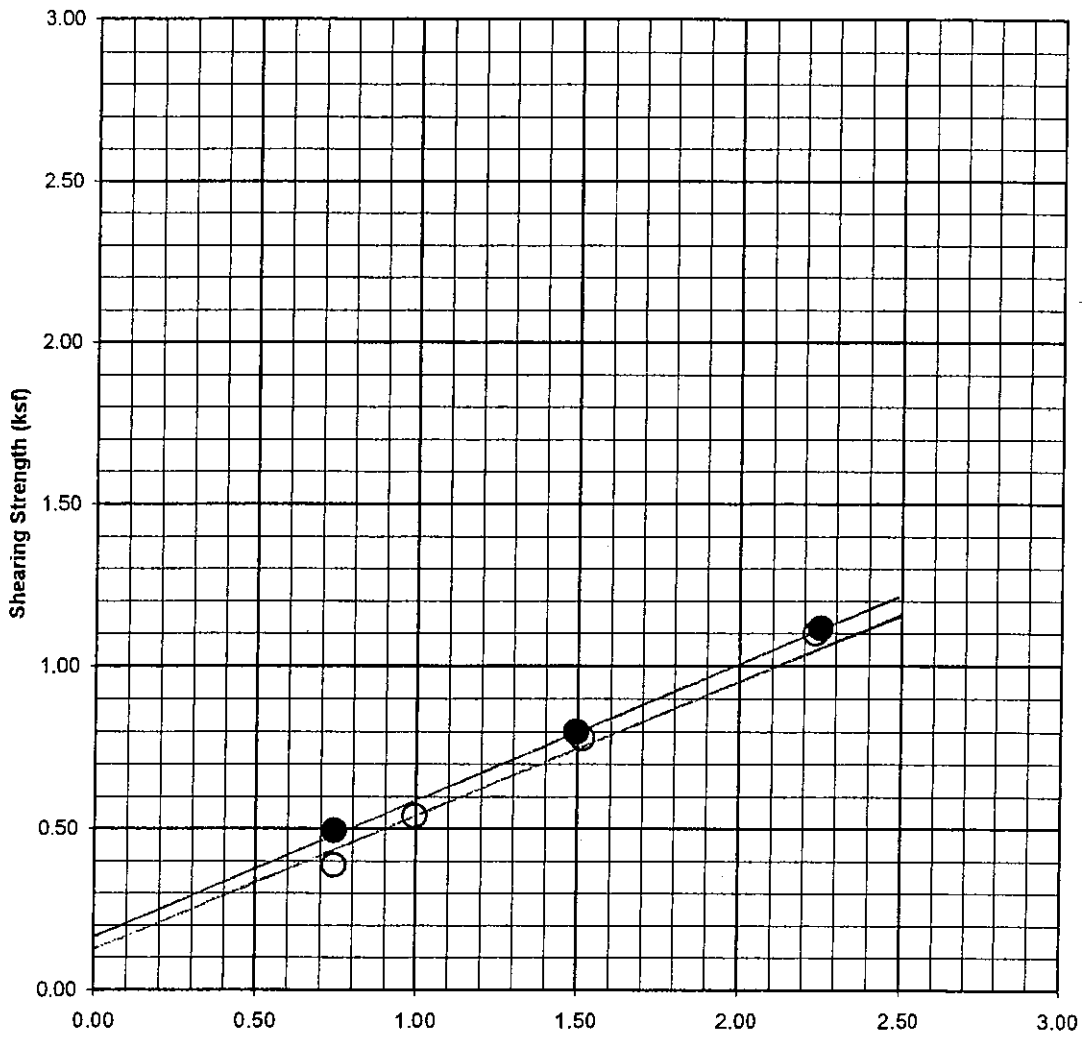
Shear Test Diagram

Peak

C(psf): **170** Phi (degrees): **23.5**

Reshear

C(psf): **130** Phi (degrees): **23.0**



Direct Shear, Peak / Reshear Speed: .001 in./min.

● Peak Values O Reshear Values

Sample **Remolded** to 90% Relative Density, Saturated.
Remolded Dry Density = 108.9 PCF

Medium-brown, sandy, clayey SILT.

MAX: 121.0 PCF: 12.0%

21.1% Saturated Moisture Content

6160.2

eSolar, Alta Vista
W.O.: 6160

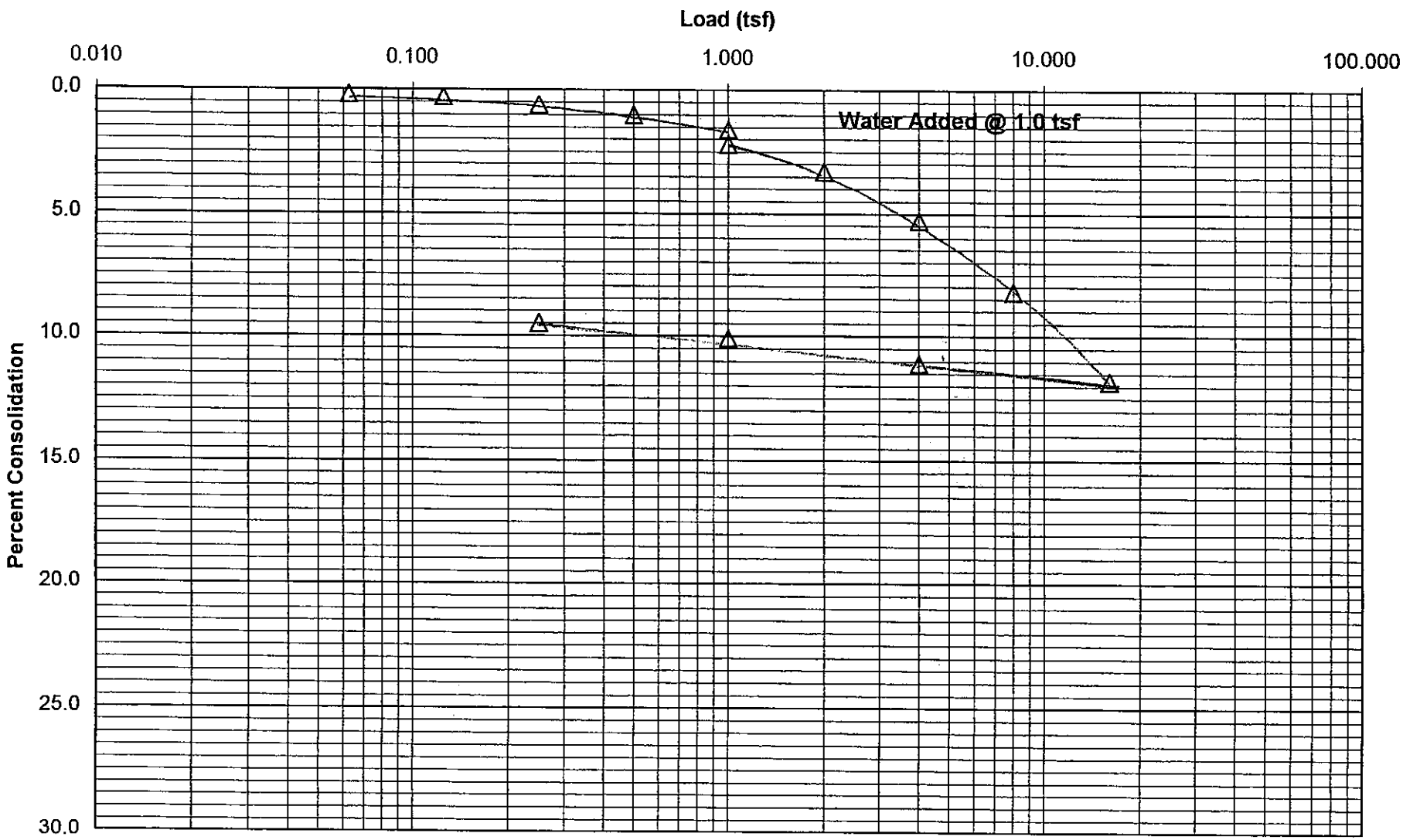
Date of Test: 6/08

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 9.4 After: 15.5

Sample(in.)
Height: 1.00 Diameter: 2.36



B-1 @ 5.0'
Orange-brown, silty, very fine SAND.

Consolidation Diagram

C6160.1

Plate C-1

eSolar, Alta Vista
W.O.: 6160

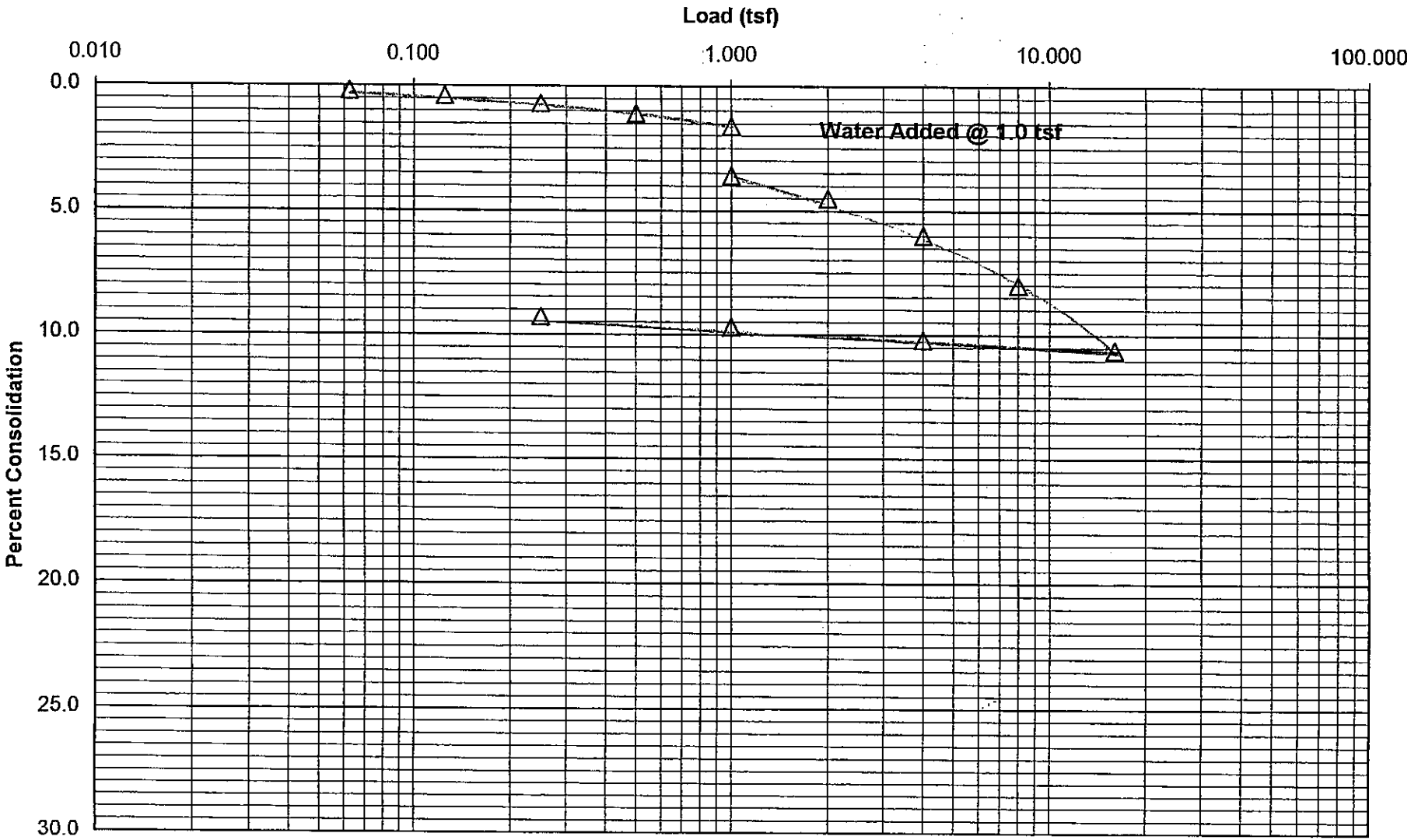
Date of Test: 6/08

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 4.8 After: 13.3

Sample(in.)
Height: 1.00 Diameter: 2.36



B-2 @ 15.0'
Orange-brown, silty, very fine to medium SAND.

Consolidation Diagram

C6160.2

Plate C-2

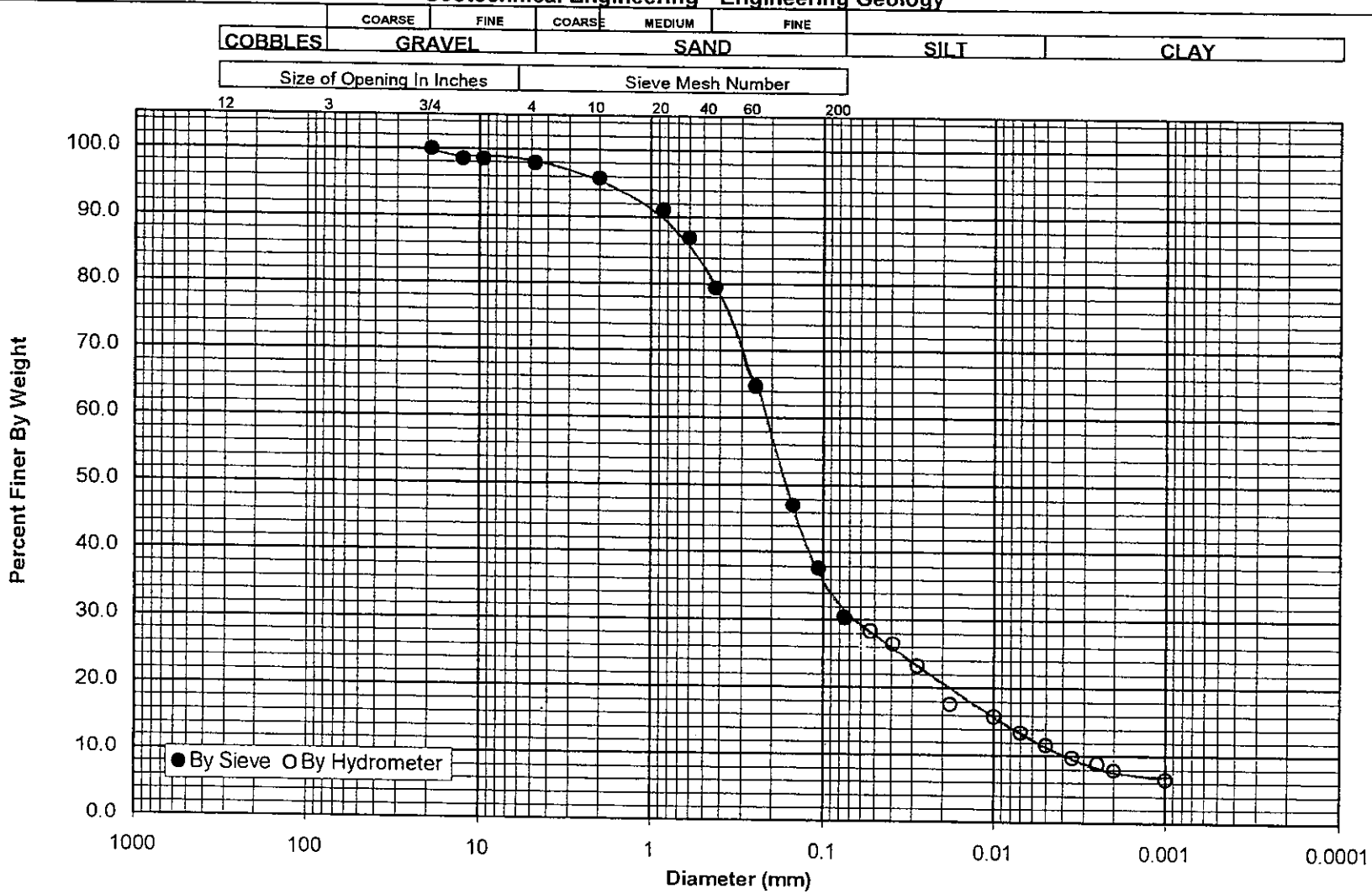
E Solar - Alta Vista
W.O. 6160

Date of Test: 6/08

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture (%): 8.9
Liquid Limit (%):
Plastic Limit (%):
Plasticity Index :



Grain Size Analysis

B-1 @ 3.0'
Dark-brown, silty, fine to medium SAND, w/ some clay.

SH6160.1

Plate G-1

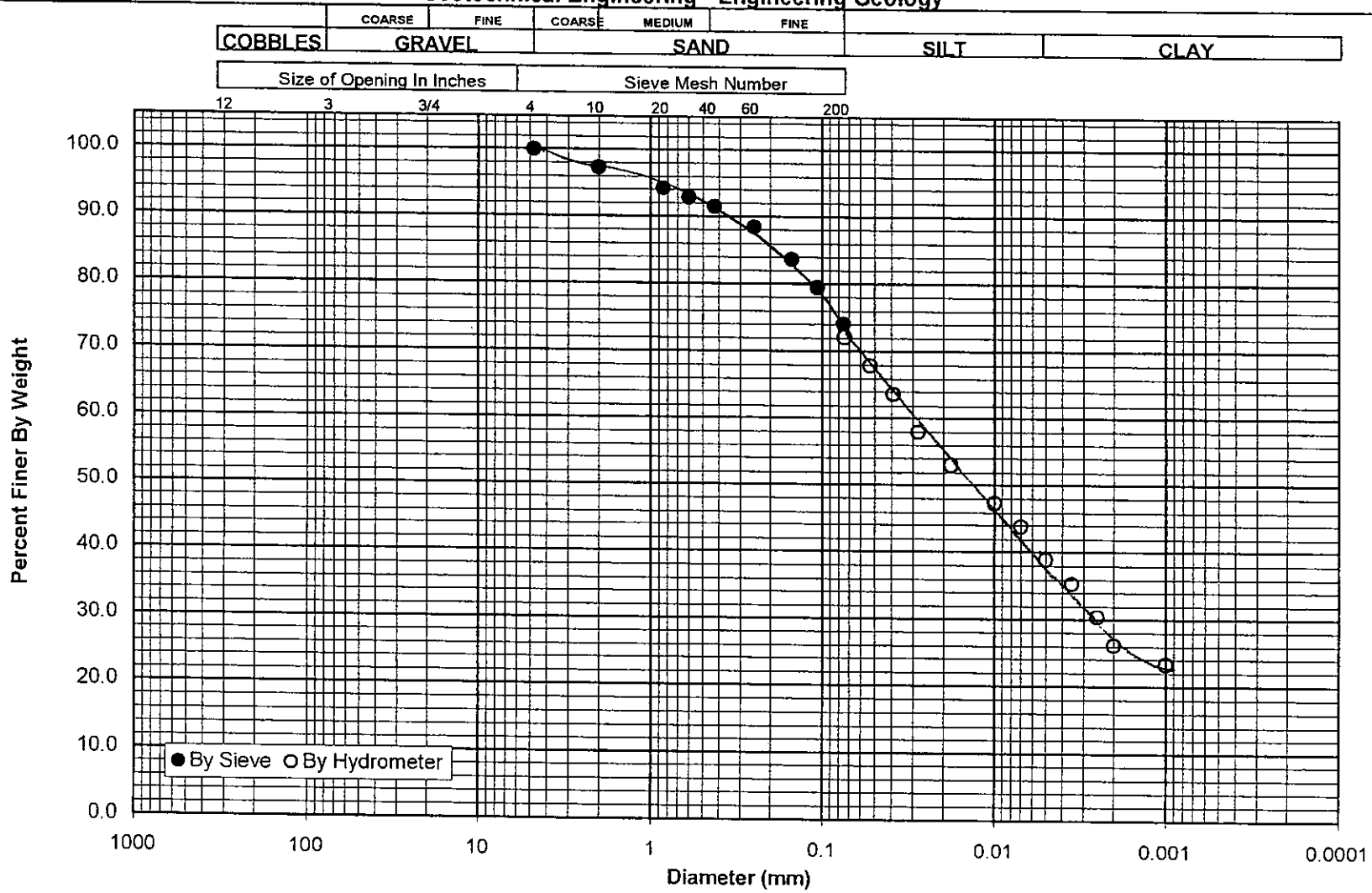
E Solar - Alta Vista
W.O. 6160

Date of Test: 6/08

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture (%): 6.0
Liquid Limit (%):
Plastic Limit (%):
Plasticity Index :



Grain Size Analysis

B-2 @ 1.5'
Medium-brown, sandy CLAY, w/ silt.

SH6160.2

Plate G-2

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Geosoils Consultants, Incorporated	**Service Request:**	P0801632
Project:	E Solar_Alta Vista/6160	**Date Collected:**	5/30/2008
Sample Matrix:	Soil	**Date Received:**	5/30/2008

Sulfate

Prep Method:	METHOD	Units:	PERCENT
Analysis Method:	300.0	Basis:	Wet
Test Notes:	A1		

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
B-2 @ 0.0'-5.0'	P0801632-001	0.002	2	6/2/2008	6/2/2008	0.061	
Method Blank	P080602-MB	0.001	1	6/2/2008	6/2/2008	ND	

A1 Sample preparation: 1:10 (weight:volume) deionized water extraction.

Approved By: _____ Date: _____

1A/020597p

PLATE CAS-1

August 21, 2008
W.O. 6160

APPENDIX B

AGRICULTURAL SOILS REVIEW

August 21, 2008
W.O. 6160

APPENDIX B

AGRICULTURAL SOILS REVIEW

Soils within the Alta Vista site are defined as Vernalis Series and Hanford Series. Mapping of the soils was by the U.S.D.A. Soil Conservation Service and are reported in their 1970 issued report entitled "Soil Survey, Antelope Valley Area, California."

The following is a detailed description of the properties of each of the project area soil types as included within the aforementioned U.S.D.A. publication.

Vernalis Series

The Vernalis series consists of well drained soils that have formed in alluvium on fans. The alluvium is dominantly granitic, but it also includes material from andesite, tuff, and such sedimentary rocks as shale, sandstone, and limestone. Slopes are 0 to 5 percent. The vegetation is chiefly annual grasses and forbs, though sagebrush and rabbitbrush grow in some areas. Average annual precipitation is 9 to 12 inches, average annual temperature is 62° F., and the frost-free season is about 220 to 260 days. Vernalis soils are associated with Hanford and Oakdale soils.

In a typical profile the surface layer is light brownish-gray and brown loam about 14 inches thick. The subsoil is pale brown loam about 21 inches thick. It is underlain by pale brown loam and sandy loam about 25 inches thick. Thin strata of coarse-textured material generally occur at a depth below 40 inches. In some places the surface layer is sandy loam, and in others it is clay loam.

These soils are used for irrigated crops and dryland crops. They are also used for range.

Vernalis loam, 0 to 2 percent slopes (Vba).—This soil is on alluvial fans along the lower part of Oso Canyon Creek.

Appendix B

Typical profile (120 feet south of the farm road and 560 feet west of the northeast corner of the section; NE1/4NE1 sec. 11, T. 8 N., R. 17 W.):

Ap—0 to 5 inches; light brownish-gray (10YR 6/2) loam, dark grayish-brown (10YR 4/2) moist; moderate, fine and medium, subangular blocky structure; hard when dry, firm when moist, slightly sticky and slightly plastic when wet; common micro roots and a few very fine roots; common micro and a few very fine irregular pores and a few very fine tubular pores; mildly alkaline (pH 7.8); clear, smooth boundary; horizon 4 to 6 inches thick.

A1—5 to 14 inches, brown (10YR 5/3) loam, dark grayish-brown (10YR 4/2) moist; massive; hard when dry, firm when moist, slightly sticky and slightly plastic when wet; common micro roots; common micro and very fine irregular pores and a few very fine tubular pores; a few colloid stains on mineral grains; mildly alkaline (pH 7.8); gradual, smooth boundary; horizon 4 to 10 inches thick.

B2—14 to 35 inches, pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; massive; hard when dry, firm when moist, slightly sticky and nonplastic when wet; a few micro roots; common micro irregular pores and common micro and very fine tubular pores; moderately alkaline (pH 8.0); gradual, smooth boundary; horizon 20 to 24 inches thick.

C1—35 to 55 inches; pale brown (10YR 6/3) loam; dark brown (10YR 4/3) moist; massive; slightly hard when dry, firm when moist, slightly sticky and nonplastic when wet; a few micro roots; common micro irregular and tubular pores and a few very fine tubular pores; very slightly effervescent; disseminated lime; moderately alkaline (pH 8.0); gradual, smooth boundary; horizon 18 to 22 inches thick.

Appendix B

C2—55 to 60 inches; pale brown (10YR 6/3) sandy loam; brown (10YR 5/3) moist, massive; slightly hard when dry, friable when moist, nonsticky and nonplastic when wet; a few micro roots; common micro irregular pores; slightly effervescent; disseminated lime; moderately alkaline (pH 8.2).

The A horizon generally is light brownish-gray, but it ranges from pale brown to brown. Structure is subangular blocky, or the soil is massive. Reaction is neutral to mildly alkaline. The B2 horizon is pale brown or brown. The C horizon generally is loam, light clay loam, or sandy loam to a depth below 40 inches, but it may be stratified with thin lenses of loamy sand or fine gravelly loamy sand. It is mildly alkaline to moderately alkaline. The content of lime varies. At a depth below 30 inches, however, the solum typically is very slightly effervescent to strongly effervescent and contains disseminated lime.

Permeability of this soil is moderate. Available water holding capacity is 9.0 to 10.0 inches, fertility is moderate, runoff is very slow, and the hazard of erosion is none to slight. Roots can penetrate to a depth of 60 inches.

Included with this soil in mapping are small areas of Oak Glen sandy loam and of Rosamond loam. Also included are areas of gravelly depositional material that are 2 to 4 acres in size. These included areas occur where intermittent streams from adjacent uplands fan out over this soil.

This Vernalis soil is used for irrigated crops and dryland crops. It also is used for range. Capability unit I-1 (19) irrigated, IVec-1 (19) dryland; range site 2.

Vernalis sandy loam, 0 to 2 percent slopes (VaA).—The surface layer of this soil is pale brown or light brownish-gray sandy loam about 8 to 12 inches thick. It has moderate subangular blocky structure.

Appendix B

The hazard of soil blowing is slight on this soil. Available water holding capacity is 8.5 to 9.5 inches.

Included with this soil in mapping are small areas of Hanford sandy loam and of Oak Glen sandy loam.

This Vernalis soil is used about the same as Vernalis loam, 0 to 2 percent slopes. Capability unit I-1 (19) irrigated, IVec-1 (19) dryland; range site 2.

Hanford Series

In the Hanford series are well-drained or somewhat excessively drained soils that have formed in granitic alluvium. These soils are on alluvial fans. Slopes are 2 to 15 percent. The vegetation is mainly annual grasses and forbs, but California junipers are scattered over the areas. Elevations range from 2,600 to 3,500 feet. Average annual precipitation ranges from 9 to 12 inches, average annual temperature is about 62° F., and the frost-free season ranges from about 220 to 260 days. Hanford soils are associated with Greenfield and Ramona soils.

The surface layer in a typical profile is pale brown coarse sandy loam about 8 inches thick. Below is light yellowish-brown coarse sandy loam and gravelly loamy coarse sand that extends to a depth of 70 inches or more. In some places the surface layer is loamy sand, sandy loam, gravelly sandy loam, or loam.

These soils are used for irrigated crops, for dryland small grains, for range, and for wildlife.

Hanford coarse sandy loam, 0 to 2 percent slopes (HbA).—This soil is on long, smooth, convex alluvial fans near Fairmont.

Typical profile (0.3 miles south of Lancaster Road (Old High 138) and 205th Street West; SW1/4SE1/4 sec. 29, T. 8 N., R. 15 W.):

Appendix B

A1—0 to 8 inches, pale brown (10YR 6/3) coarse sandy loam, dark brown (10YR 4/3) moist; massive; hard when dry, friable when moist, nonsticky and nonplastic when wet; many micro and very fine roots and a few fine roots; common micro irregular pores and a few very fine tubular pores; 5 to 8 percent, by volume, is very fine gravel; slightly acid (pH 6.5); horizon 8 to 14 inches thick.

C1—8 to 39 inches, light yellowish-brown (10YR 6/4) coarse sandy loam, dark yellowish-brown (10YR 4/4) moist; massive; slightly hard to hard when dry, friable when moist, nonsticky and nonplastic when wet; common micro and very fine roots and a few fine and medium roots; common micro irregular pores; about 8 to 10 percent, by volume, is fine gravel; slightly acid (pH 6.5); gradual, smooth boundary; horizon 30 to 34 inches thick.

C2—39 to 71 inches, light yellowish-brown (10YR 6/4) gravelly loamy coarse sand, yellowish-brown (10YR 5/4) moist; massive; slightly hard when dry, friable when moist, nonsticky and nonplastic when wet; a few micro and very fine roots; about 25 percent, by volume, is fine gravel; neutral (pH 6.8).

In color the A1 horizon is pale brown, brown, light yellowish-brown, or yellowish-brown. The C1 horizon generally is light yellowish-brown, brownish-yellow, yellowish-brown, or strong brown coarse sandy loam or sandy loam. It is slightly acid to neutral. The C2 horizon generally is light yellowish-brown, brownish-yellow, yellowish-brown, or strong brown in color. It ranges from gravelly loamy coarse sand to gravelly coarse sandy loam in texture and generally contains some fine, angular, granitic gravel. The content of gravel, however, is seldom more than 25 percent. The C2 horizon ranges from neutral to mildly alkaline, and in places it is slightly effervescent. In areas where Hanford soils adjoin Greenfield soils, thin layers of different colored material occur at a depth of 36 to 40 inches.

Appendix B

Permeability of this soil is moderately rapid. Available water holding capacity is 5.0 to 7.0 inches. Fertility is low. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Roots can penetrate to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Greenfield sandy loam. Also included are long narrow areas of Riverwash and of Sandy alluvial land along large intermittent drainageways.

This Hanford soil is used for irrigated crops, for dryland small grains, and for range. Capability unit IIs-4 (19) irrigated, IVec-1 (19) dryland; range site 2.

Greenfield Series

The Greenfield series consists of well-drained soils that have formed in granitic alluvium. These soils are on alluvial fans and terraces. Slopes are 0 to 15 percent. Annual grasses and forbs make up the vegetation. Elevations range from 2,600 to 3,500 feet. Average annual precipitation ranges from 9 to 12 inches, average annual temperature is about 62° F., and the frost-free season ranges from about 220 to 260 days. Greenfield soils are associated with Hanford and Ramona soils.

In a typical profile, the surface layer is pale brown and brown sandy loam about 20 inches thick. The subsoil is brown sandy loam and heavy sandy loam about 40 inches thick. Below is brown coarse sandy loam.

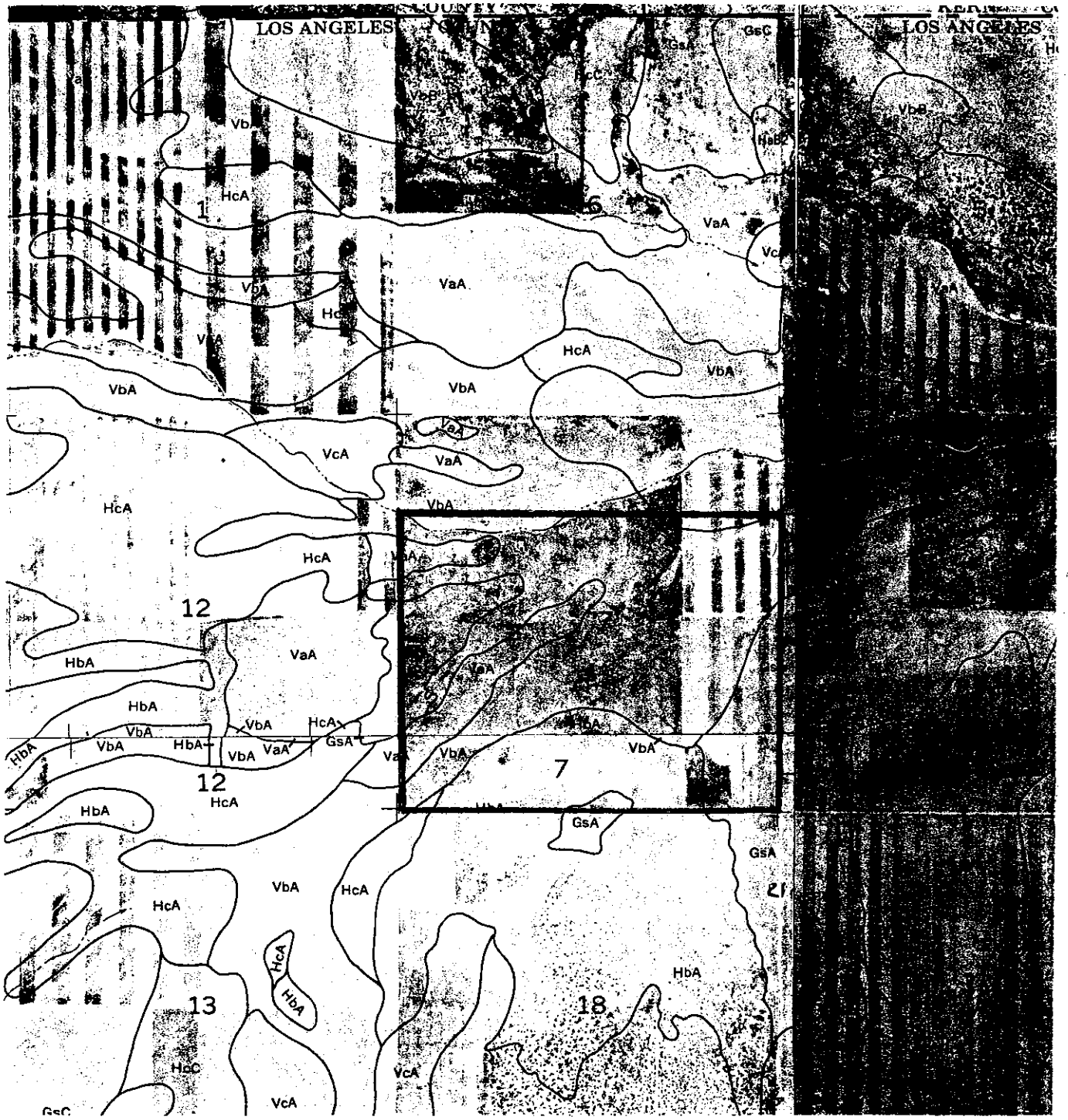
These soils are used for irrigated and dryland crops. They also are used for pasture and for range.

Greenfield sandy loam, 0 to 2 percent slopes (GsA).—This soil is on long, smooth, broad alluvial fans near Fairmont. In places the surface layer is coarse sandy loam. Runoff is very slow, and the hazard of erosion is slight. Cobblestones occupy some areas, but they do not interfere with tillage.

Appendix B

Included with this soil in mapping are small areas that have a layer of material, 3 to 6 inches thick, that was washed onto the areas from higher lying soils. Also included are small tracts of Riverwash and of Sandy alluvial land that occupy long narrow areas in channels of large intermittent drainageways. Other included areas consist of Hanford coarse sandy loam, 0 to 2 percent slopes.

This Greenfield soil is used about the same as Greenfield sandy loam, 2 to 9 percent slopes. Capability unit I-1 (19) irrigated, IVec-1 (19) dryland; range site 2.



FROM: "SOIL SURVEY OF ANTELOPE VALLEY AREA, CALIFORNIA", BY U.S.D.A. SOIL CONSERVATION SERVICE, 1971.

SCALE: 1:24,000

GSC GeoSoils Consultants Inc.
GEOTECHNICAL•GEOLOGIC•ENVIRONMENTAL

SOIL MAP
ALTA VISTA SITE
ESOLAR

DATE 5/2008	W.O. NO. 6160

Geotechnical•Geologic•Environmental

August 21, 2008
W.O. 6160

APPENDIX C

GENERAL GRADING GUIDELINES

APPENDIX C

GENERAL GRADING GUIDELINES

These specifications present the usual and minimum requirements for grading operations performed under the control of GeoSoils Consultants, Inc.

No deviation from these specifications would be allowed, except where specifically superseded in the preliminary geology and geotechnical report, or in other written communication signed by the Geotechnical Engineer or Engineering Geologist.

1. **General**

   A. The Geotechnical Engineer and Engineering Geologist are the Owner's or Builder's representative on the project. For the purpose of these specifications, supervision by the Geotechnical Engineer or Engineering Geologist includes that inspection performed by any person or persons employed by, and responsible to, the licensed Geotechnical Engineer or Engineering Geologist signing the Geotechnical report.

   B. All clearing, site preparation or earthwork performed on the project should be conducted by the Contractor under the observation of the Geotechnical Engineer or Engineering Geologist.

   C. It is the Contractor's responsibility to prepare the ground surface to receive the fills to the satisfaction of the Geotechnical Engineer or Engineering Geologist and to place, spread, mix, water, and compact the fill in accordance with the specifications of the Geotechnical Engineer or Engineering Geologist. The Contractor should also remove all material considered unsatisfactory by the Geotechnical Engineer or Engineering Geologist.

Appendix C

D. It is also the Contractor's responsibility to have suitable and sufficient compaction equipment on the jobsite to handle the amount of fill being placed. If necessary, excavation equipment would be shut down to permit completion of compaction. Sufficient watering apparatus would also be provided by the Contractor, with due consideration for the fill material, rate of placement and time of year.

E. A final report should be issued by the Geotechnical Engineer and Engineering Geologist attesting to the Contractor's conformance with these specifications.

F. At all times, safety will have precedence over production work. All municipal, State, and Osha Safety guidelines should be allowed beneath unshared vertical cuts, within unshored trenches with vertical walls in excess of four feet high, or in any unsafe working environment. If an unsafe job condition is noted by a GeoSoils Consultants, Inc. representative, it would be brought to the attention of the Grading Contractor's foreman, the on-site developer's representative, or both. Once this condition is noted, it should be corrected as soon as possible, or work related to the unsafe condition may be terminated.

2. **Site Preparation**

A. All vegetation and deleterious material, such as rubbish, should be disposed of off-site. This removal must be conducted prior to placing fill.

B. The Contractor should locate all subsurface features (i.e. sewage disposal systems, basements, pipelines, wells, etc.) on the site, or on the grading plan, to the best of his knowledge prior to preparing the ground surface.

C. Soil or rock materials determined by the Geotechnical Engineer as being unsuitable for placement in compacted fills should be removed and wasted from the site. Any material incorporated as a part of a compacted fill must be approved by the Geotechnical Engineer.

Appendix C

D. After the ground surface to receive fill has been cleared, it should be scarified, disced, or bladed by the Contractor until it is uniform and free from ruts, hollows, hummocks or other uneven features which may prevent uniform compaction.

The scarified ground surface should then be brought to at least optimum moisture, but not more than 120 percent of optimum moisture, mixed as required, and compacted as specified. If the scarified zone is greater than 12 inches in depth, the excess should be removed and placed in lifts restricted to 6 to 8 inches.

Prior to placing fill, the ground surface to receive fill should be inspected and approved by the Geotechnical Engineer.

E. Any underground structures such as cesspools, cisterns, mining shafts, tunnels, septic tanks, wells, pipelines or other not located prior to grading are to be removed or treated in a manner prescribed by the Geotechnical Engineer.

3. **Compacted Fills**

A. Material imported or excavated on the property may be utilized in the fill, provided such material has been determined to be suitable by the Geotechnical Engineer. Roots, tree branches and other deleterious matter missed during clearing should be removed from the fill as directed by the Geotechnical Engineer.

B. Unless otherwise prohibited by the governing code, rock, brick, concrete, or asphalt fragments less than six inches in diameter may be utilized in the fill, provided:

1. they are not placed in concentrated pockets;
2. there is a sufficient percentage of fine-grained material to surround the rocks;

Appendix C

3. the distribution of the rocks is supervised by the Geotechnical Engineer.

C. Rocks greater than six inches in diameter should be taken off-site, or placed in accordance with the recommendations of the Geotechnical Engineer in fill areas designated as suitable for rock disposal.

D. Material that is spongy, subject to decay, or otherwise considered unsuitable should not be used in the compacted fill.

E. Representative samples of materials to be utilized as compacted fill should be analyzed in the laboratory by the Geotechnical Engineer to determine their physical properties. If any material other than that previously tested is encountered during grading, the appropriate analysis of this material should be conducted by the Geotechnical Engineer as soon as possible.

F. Material used in the compacting process should be evenly spread in thin lifts not to exceed six to eight inches in thickness, watered, processed and compacted to obtain a uniformly dense layer. The fill should be placed and compacted on a horizontal plane, unless otherwise approved by the Geotechnical Engineer. This includes material placed for slope repairs, and utility trench backfills on slope areas.

G. Each layer should be compacted to at least a minimum of 90 percent of the maximum density in compliance with the testing method specified by the controlling governmental agency (in general, ASTM D-1557-07 would be used). For all fills greater than 40 feet in vertical thickness, the portion of the fill below a depth of 40 feet should be placed at a relative compaction of at least 95 percent.

Appendix C

If compaction to a lesser percentage is authorized by the controlling governmental agency because of a specific land use or geotechnical condition, the area to receive fill compacted to less than 90 percent should either be delineated on the grading plan or appropriate reference made to the area in the geotechnical report.

H. All fill must be brought to a moisture content of at least optimum moisture, but should not exceed 120 percent of optimum moisture. If excessive moisture in the fill results in failing tests or an unacceptable "pumping" condition, then the fill should be allowed to dry until the moisture content is within the necessary range to meet above compaction requirements, or should be removed or reworked until acceptable conditions are obtained.

I. If the moisture content or relative compaction varies from that required by the Geotechnical Engineer, the Contractor should rework the fill until it is in accordance with the requirements of the Geotechnical Engineer. If a compaction test indicates that the fill meets or exceeds the minimum required relative compaction but is below optimum moisture content, then the fill should be reworked until it meets the moisture content requirements.

5. **Grading Control**

A. Inspection of the fill placement should be provided by the Geotechnical Engineer during the progress of grading.

B. In general, density tests should be made at intervals not exceeding two vertical feet of fill height or every 500 to 1000 cubic yards of fill placed. This criteria will vary depending on soil conditions and the size of the job. In any event, an adequate number of field density tests should be made to verify that the required compaction is being achieved.

Appendix C

C. Density tests should also be made on the surface material to receive fill as required by the Geotechnical Engineer.

D. All cleanout, processed ground to receive fill, key excavations, subdrains and rock disposal should be inspected and approved by the Geotechnical Engineer prior to placing any fill. It should be the Contractor's responsibility to notify the Geotechnical Engineer when such areas are ready for inspection. In most jurisdictions, these items must also be inspected by a representative of the controlling governmental agency prior to fill placement.

6. **Construction Considerations**

A. Erosion control measures, when necessary, should be provided by the Contractor during grading and prior to the completion and construction of permanent drainage controls.

B. Upon completion of grading and termination of inspections by the Geotechnical Engineer, no further filling or excavating, including that necessary for footings, foundations, large tree wells, retaining walls, or other features should be performed without the approval and observation of the Geotechnical Engineer or Engineering Geologist.

C. Care should be taken by the Contractor during final grading to preserve any berms, drainage terraces, interceptor swales, or other devices of a permanent nature on or adjacent to the property.

Appendix C
Hydrology and Hydraulics Report

PRELIMINARY
Hydrology & Hydraulics Report

NRG SOLAR
an NRG Energy Company

Alpine Solar Generating Station
County of Los Angeles, CA

Prepared For:

Mr. Raymond Kelly, Environmental Director
NRG Solar, LLC
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Carlsbad, CA 92008

Phone: 760 . 710 . 2140
Fax: 760 . 918 . 0310

May 11, 2010

JOSEPH E.
BONADIMAN
& ASSOCIATES, INC.

PRELIMINARY

Hydrology & Hydraulics Study

Alpine Solar Generating Station
County of Los Angeles, CA

Prepared For:

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May 11, 2010

REGISTERED PROFESSIONAL ENGINEER
JOSEPH S.C. BONADIMAN
No. C-30238
Exp. 3-31-10
CIVIL
STATE OF CALIFORNIA

Table of Contents

I. PRELIMINARY HYDROLOGY & HYDRAULICS REPORT	
A. Introduction	Page 1
B. Methodology	Page 2
C. Existing Conditions Tributary & On-Site Drainage Areas Discussion	Page 4
D. Existing Conditions Hydrology Calculations & Summary	Page 8
E. FEMA Floodplain Identification & Summary	Page 9
F. Sedimentation Calculations	Page 9
F. Information Regarding Antelope Valley Master Drainage Plan	Page 10
H. Recommendations	Page 10
II. EXHIBITS	-
III. ATTACHMENTS	-

Exhibits

Title	Exhibit
Project Watershed Location	"A"
Project Watershed – USGS Quadrangle	"B"
Project Watershed – Aerial Orthophoto	"C"
Applicable Los Angeles County Soil/Rainfall/DPA Zone Maps	"D"
Existing Hydrologic Conditions Study Map	"E"
FEMA Floodplain Maps	"F"

Attachments

Attachment	No.
Existing Conditions Time of Concentration (TC) Calculations	1
Existing Conditions LAR04 Input Tables	2
Existing Conditions LAR04 Calculations (Non-Burn Conditions)	3
Existing Conditions LAR04 Calculations (Burn Conditions)	4
Existing Conditions Unit Hydrographs (Non-Burn Conditions)	5
Existing Conditions Unit Hydrographs (Burn Conditions)	6
Sedimentation Calculations	7
Information Regarding Antelope Valley Master Drainage Plan	8
CD of Complete Report (PDF Format)	9

Preliminary Hydrology & Hydraulics Report

A. Introduction

1.1 Purpose & Scope

The following Preliminary Hydrology & Hydraulics Report has been prepared for the new development of the approximately 793-acre NRG Solar, LLC Alpine Solar Generating Station in the County of Los Angeles, CA to satisfy Los Angeles County Department of Public Works Hydrology/Hydraulics preliminary requirements for developments of this type.

The scope of this Report is as follows:

- Identification of existing conditions tributary drainage areas and calculation of total peak flow rates and runoff volumes impacting the project site.
- Identification of existing conditions on-site drainage areas and calculation of peak flow rates and runoff volumes for these areas.
- Identification of floodplain(s) impacting the site.
- Identification of total estimated sedimentation loads for each major drainage area impacting the project site.
- Recommendations pertaining to the development of final Hydrology, Hydraulics and SUSMP documents.

1.2 Project Overview

The proposed project entails the construction of approximately 617 acres of photovoltaic solar panels on two sites (a western site of approximately 593 acres and an eastern site of approximately 200 acres) in the Antelope Valley region of Los Angeles County, approximately 10.5 miles west of the City of Palmdale limits and 19 miles west of State Highway 14. The existing western site is bordered by Avenue "B" to the north, Avenue "C" to the south, 210th Street West to the east, and 220th Street West to the west. The existing eastern site is bordered by agricultural properties to the north and west, 200th Street West to the east, and West Avenue "C" to the south. The sites lie within the "Burnt Peak", "Neenach School", "Fairmont Butte", and "Lake Hughes" USGS Quadrangles. Refer to Exhibit "A" for the general project site and watershed location; refer to Exhibits "B" and "C" for the applicable USGS Quadrangles and an Aerial Orthophoto of the project sites and watershed.

Based on the Preliminary Site Plan for the project prepared by Joseph E. Bonadiman & Associates, Inc. (revised June 10, 2010), the proposed project is to consist of approximately 429 acres of photovoltaic solar panels on the western site, approximately 188 acres of photovoltaic solar panels on the eastern site, a small power equipment/maintenance building/parking area at the southeast corner of the western site, fence/security improvements, and street improvements. The approximately 141 acres north of and including the natural drainage channel traversing the western site is to be left undisturbed.

The project is considered to be very low impact, and does not propose any change in method, direction, or intensity of existing flows, nor an increase in impervious area (with the exception of the very small parking/administration area proposed for the western site).

1.3 References

The following documents have been made part of this Report by reference:

1.) Los Angeles County Department of Public Works Hydrology Manual, January 2006.
2.) Los Angeles County Department of Public Works Sedimentation Manual, March 2006.
3.) Preliminary Site Plan prepared by Joseph E. Bonadiman & Associates, Inc., June 10, 2010.
4.) Antelope Valley Final Report on the Comprehensive Plan of Flood Control & Water Conservation, June 1987.

B. Methodology

1.1 General Methodology

The requirements and recommendations found in the Los Angeles County Hydrology Manual (January 2006) provided by the Los Angeles County Department of Public Works was used as the basis for the methodology and calculations found in this Report. Per County requirements, all design calculations are based on the **50-Year, 24-Hour Storm Return Frequency/Duration**.

1.2 Time of Concentration (TC) Calculations

Time of Concentration (TC) values for both existing and developed drainage subareas were calculated using the **TC Calculator Spreadsheet (Kinematic Wave Method)** provided by the County. For existing conditions off-site subareas, separate TC watercourses (in addition to delineated Modified Rational Method watercourses) from the most hydrologically remote point of each subarea to the outlet of each subarea were delineated per County requirements; these separate watercourses are shown on Exhibit "E". For existing on-site and developed conditions drainage subareas, the TC watercourse delineations are virtually identical to the Modified Rational Method watercourse delineations and therefore do not warrant separate delineations.

To produce accurate TC and Modified Rational Method calculations, initial drainage subareas have been limited to 40 acres or less. Subsequent drainage subareas have been limited to sixty acres or less, and subsequent subarea watercourses have been limited to 3,150 feet or less – far below the requisite County maximums for area and length.

Due to the extremely gradual slopes and comparably low rainfall values of the existing drainage subareas downstream of the California Aqueduct and upstream of the project site (as well as existing on-site subareas), the maximum TC of 30 minutes has been calculated for the vast majority of these areas.

For this Report, the peak flow rates/runoff volumes of the Modified Rational Method (LAR04) calculations have been used in lieu of the TC calculator flow rates/runoff volumes.

1.3 Modified Rational Method (LAR04) Calculations

The **Modified Rational Method (LAR04/F0601)** software application originally developed by Los Angeles County and currently made available by CivilDesign® Corporation was used for all Modified Rational Method calculations in this Report. LAR04/F0601 was also used to generate the developed on-site subarea unit hydrographs used in this Report.

1.4 Sources of Topography

For existing conditions tributary (off-site) areas, 20' topographic contours generated from USGS elevation data in addition to applicable USGS quadrangles were used for all elevation values. For existing conditions on-site areas, 2' topographic contours generated from an aerial survey of the site were used for all elevation values. For developed conditions on-site areas, proposed 2' topographic contours and proposed spot elevations were used for all elevation values.

1.5 Geographic Information System (GIS) Data

Due to the very large (12,232-acre) watershed analyzed in this Report, available Geographic Information System (GIS) data was utilized to expedite tabulation of TC and Modified Rational Method input values, as follows:

- Major watershed and major watercourse shapefile data obtained from the California Spatial Information Library (CASIL) were used for identification of major watershed(s) applicable to the project site, and to identify the major receiving waters for project site discharge. Refer to Exhibit "A" for general project watershed location.

- A Digital Elevation Model (DEM) of the National Elevation Dataset (NED) provided by USGS was used to generate the 20' topographic contours used for the tributary drainage areas shown in this Report. Digital Raster Graphics (DRGs) of USGS Quadrangles provide by CASIL were also used to verify elevations, blue line streams, and other topographical features. Refer to Exhibit "B" for the partial Quadrangles applicable to the project watershed.

- Orthorectified Aerial Photography provided by USGS and Google Earth was used for verification of topographic features and identified low flows. Refer to Exhibit "C" for an aerial orthophoto of the project watershed.

- The soil classification and rainfall intensity values shapefile data provided by the Los Angeles County Department of Public Works (based on the January 2006 Hydrology Manual) was used for all drainage subareas in this Report.

1.6 Soil Classifications & Rainfall Intensity Values

The soil classifications and rainfall values used in this Report are tabulated below. For the purposes of this Report, only "burned" soils conditions have been considered; this has produced more conservative peak flow rate calculations. For the Antelope Valley region, a Burn Factor of 1.3 has been applied per the County Hydrology Manual requirements for Time of Concentration (TC) calculations. For Modified Rational Hydrology Method (LAR04) calculations, a value of "200" has been added to soil classification input numbers to generate burned conditions peak flows per the LAR04 software documentation.

To obtain interpolated rainfall values for all drainage subareas, the 50-Year, 24-Hour rainfall intensity isohyetal GIS shapefiles provided by the County were used to create a raster dataset, from which spot values were extracted and appended to the centroid of each individual drainage subarea. For Modified Rational Hydrology Method (LAR04) calculations, a multiplier of "5" was applied per the LAR04 software documentation.

Table 1 – Soil Classifications & Rainfall Intensity Values Summary

MIN. RAINFALL	MAX. RAINFALL	AVG. RAINFALL
4.4	7.8	6.19
SOIL VALUES USED	**BURN FACTOR (TC CALC)**	**BURN FACTOR (LAR04)**
120, 124, 134	1.3	SOIL + 200

Refer to Exhibits "D-1" through "D-4" for all applicable Los Angeles County Hydrology Manual Soil/Rainfall maps. Refer to Exhibit "E" for the soil classification/rainfall intensity delineations and isohyetals applicable to the project watershed.

C. Existing Conditions Tributary & On-Site Drainage Areas Discussion

1.1 Overview

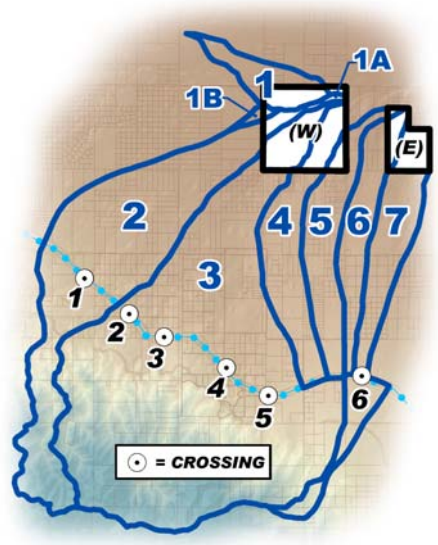
The existing conditions watershed for the project sites is approximately 12,232 acres in size, and consists of nine (9) Major Drainage Areas, identified as follows:

Table 2 – Existing Conditions Major Drainage Areas

MAJOR AREA NO.	SIZE (AC)	IMPERVIOUS %	TOTAL SUBAREAS
1	352.60	0.01	10
1A	13.40	0.01	1
1B	35.20	0.01	3
2	2,591.40	0.01	173
3	6,012.90	0.01	356
4	858.90	0.01	27
5	766.20	0.01	36
6	610.10	0.01	21
7	991.90	0.01	34
TOTAL:	**12,232.60**		

Topographic characteristics for all existing conditions areas were identified using a.) Applicable USGS Quadrangle Maps and b.) 20' USGS topographic contours generated from available USGS elevation data. Aerial orthophotos were also utilized to verify the delineation of identified washes.

Based on this topographic information, tributary drainage to the project site for Major Drainage Areas 2, 3 and 7 originates in the foothill areas upstream of the California Aqueduct; this runoff crosses the Aqueduct via five identified culvert locations. Prior to reaching the Aqueduct, drainage is characterized by comparably steep slopes and numerous small channels concentrating into more significant USGS blue line streams which discharge from the foothills in a manner typical of alluvial fans. After crossing the Aqueduct, drainage velocities are significantly reduced by the extremely flat terrain and high Time of Concentration (TC) values (generally the 30-minute maximum) of the Areas 2, 3 and 7 subareas downstream of the Aqueduct and upstream of the project sites.



The portions of Major Areas 2, 3 and 7 downstream of the Aqueduct, as well as all of Major Drainage Areas No. 1, 1A, 1B, 4, 5, and 6, consist of very flat terrain with vegetation typical of the Antelope Valley region and relatively sandy soil. A significant amount of these areas has been used for agricultural purposes in the past; as such, much of the vegetation in these areas has been cleared. Although a handful USGS blue-line streams (low flows) are identified downstream of the Aqueduct, concentration of these low-flows is shown to dissipate significantly prior to reaching the project site. Numerous unpaved roads and trails and a small number of small private residences are also located within these areas.

For the purposes of this Report, an impervious percentage of 0.01% has been assumed for all existing conditions drainage subareas per the requirements of the County Hydrology Manual for the analysis of 100% pervious subareas.

A field investigation was conducted by Joseph E. Bonadiman & Associates, Inc. on January 13, 2009 to verify the drainage characteristics discussed above. The following photos were taken during the investigation to substantiate the findings included in this Report:

Photo No. 1 – Tributary Drainage Areas, Typical

Photo No. 2 – Tributary Drainage Areas, Typical

Photo No. 3 – Tributary Drainage Areas, Typical

Photo No. 4 – Tributary Drainage Areas, Typical

1.2 California Aqueduct Crossings

As discussed earlier, the California Aqueduct traverses existing Major Drainage Areas 2, 3 and 7 in a southeasterly direction. Upstream runoff crosses the Aqueduct at six (6) identified culvert crossing locations. The locations of these crossings were verified during the aforementioned January 13th field investigation. Per the investigation, the culvert crossings were found to vary in size and type from box culverts to corrugated pipe(s), as indicated by the following photos:

Photo No. 5 – Aqueduct Crossing No. 1

Photo No. 6 – Aqueduct Crossing No. 2

Photo No. 7 – Aqueduct Crossing No. 3

Photo No. 8 – Aqueduct Crossing No. 4

Photo No. 9 – Aqueduct Crossing No. 5

Photo No. 10 – Aqueduct Crossing No. 6

For the purposes of this Preliminary Report, free flow through the Aqueduct crossings has been assumed (no losses have been applied through the culverts). This has resulted in more conservative peak flow calculations. Per Recommendation No. 1 in "G", the Final Report should incorporate the impact of the culvert crossings on the calculated peak flows rates at the crossing locations.

Refer to Exhibit "E" for the locations of Crossings 1 through 6.

1.3 Existing Conditions On-Site Areas

The existing on-site drainage subareas are essentially a continuation of the tributary areas downstream of the Aqueduct and share the same general characteristics (extremely gradual slope, etc.). No USGS blue line streams traverse the project site, and no significant scour is evident. The following field investigation photos illustrate the existing on-site drainage features/characteristics:

Photo No. 10 – Existing On-Site Areas (Project Site), Typical

Photo No. 11 – Existing On-Site Areas (Project Site), Typical

1.1 Existing Natural Drainage Channel

As discussed above, an existing natural drainage channel runs from west to east across the western site. This channel (an identified USGS blue line stream) currently accepts all tributary flows from the west and southwest, as well as the majority of existing on-site flows, and is considered the primary receiving water for the project. Photos of the existing channel are included below:

Photo No. 12 – Natural Drainage Channel

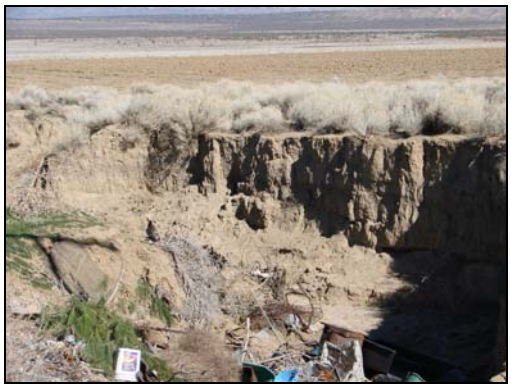


Photo No. 13 – Natural Drainage Channel

D. Existing Conditions Hydrology Calculations & Summary

1.1 Existing Conditions Drainage Areas – Time of Concentration (TC) Calculations

Time of Concentration (TC) calculations were performed using the County TC Calculator Spreadsheet for all existing conditions drainage subareas. Refer to *Attachment 1* for TC input/output calculations for the subareas of Major Drainage Areas 1 through 7. These calculated TC values were used in the Modified Rational Method calculations performed for these subareas. Per County requirements, the minimum calculated TC value was five (5) minutes, and the maximum TC value was thirty (30) minutes.

1.2 Existing Conditions Drainage Areas – Modified Rational Method (LAR04) Calculations

Modified Rational Method (LAR04) calculations were performed for existing conditions drainage subareas. Input tables for these calculations can be found in *Attachment 2*. Refer to Exhibit "E" for the Existing Conditions Hydrology Study Map. Due to the large number of subareas in question, the tabulated Modified Rational Method input values and subsequent peak flow rate calculations are provided in *Attachments 3* (Non-burned conditions) and *4* (Burned Conditions) rather than in the body of this Report. However, summarized peak flow rates for Major Drainage Areas 1 through 7 are tabulated below:

Table 3 – Existing Conditions LAR04 Calculations Summary – 50-Year/24-Hour Event

MAJOR AREA NO.	TOTAL AREA (AC)	LOCATION (LAR04)	LOCATION	TOTAL Q_{50} (NO BURN) (CFS)	TOTAL Q_{50} (BURN) (CFS)
1	352.60	1-11A	DISCHARGE TO EXISTING EARTHEN CHANNEL	25.41	115.14
1A	13.40	1A-2	WESTERN BOUNDARY OF WESTERN SITE	1.56	6.00
1B	35.20	1B-4	DISCHARGE TO EXISTING EARTHEN CHANNEL	3.44	14.32
2	826.40	2-72AB	AQUEDUCT CROSSING NO. 1	513.12	877.44
2	2,591.40	2-230A	DISCHARGE TO EXISTING EARTHEN CHANNEL	527.22	1,326.09
3	989.40	3-456CD	AQUEDUCT CROSSING NO. 2	448.18	925.61
3	444.20	3-345BC	AQUEDUCT CROSSING NO. 3	171.78	411.89
3	1,268.60	3-255BC	AQUEDUCT CROSSING NO. 4	1,151.40	1,746.88
3	1,204.90	3-119AB	AQUEDUCT CROSSING NO. 5	402.01	1,037.24
3	6,012.90	3-527A	WESTERN BOUNDARY OF WESTERN SITE	1,866.75	4,542.01
4	858.90	4-30A	WESTERN BOUNDARY OF WESTERN SITE	84.76	343.35
5	766.20	5-41A	NORTHERN BOUNDARY OF EASTERN SITE	66.48	274.14
6	610.10	6-25A	NORTHEAST BOUNDARY OF EASTERN SITE	44.72	199.28
7	282.80	7-10A	AQUEDUCT CROSSING NO. 6	72.59	211.00
7	991.90	7-37A	NORTHEAST BOUNDARY OF EASTERN SITE	95.79	395.83

1.3 Existing Conditions Drainage Areas – Unit Hydrograph Calculations

Based on the Modified Rational Method (LAR04) calculations, Unit Hydrographs were generated to determine total runoff for each of the existing conditions major drainage areas. These calculations are provided in *Attachments 5* (Non-burned conditions) and *6* (Burned Conditions) and are summarized below:

Table 3 – Existing Conditions Hydrograph Calculations Summary – 50-Year/24-Hour Event

MAJOR AREA NO.	TOTAL AREA (AC)	TOTAL V_{50} (NO BURN) (AF)	TOTAL V_{50} (BURN) (AF)
1	352.60	12.94	50.17
1A	13.40	0.49	1.90
1B	35.20	1.33	5.24
2	2,591.40	146.30	503.56
3	6,012.90	399.90	1336.14
4	858.90	41.06	154.95
5	766.20	36.49	137.48
6	610.10	26.48	101.27
7	991.90	48.49	183.30
TOTAL:	**12,232.60**	**713.48**	**2,474.01**

E. FEMA Floodplain Identification & Considerations

1.1 Floodplain Identification

Per FEMA Map No. 06037C0100F (Effective Date - September 26, 2008), the southwestern portion of the project site is currently impacted by a Zone "A" floodplain. Zone "A" is identified by FEMA as the 1% Annual Chance (100-Year) Storm Frequency (base flood elevation equals the water surface elevation of the 100-Year storm).

The remainder of the project site is either a.) Within the 0.2% Annual Chance Flood Hazard Zone or b.) Outside of any identified floodplain (Zone "X"). Refer to Exhibits "F-1" and "F-2" for portions of the applicable FEMA Map Panels illustrating the impact of the identified floodplains on the project sites.

Note: For the final Report, it is recommended that a floodplain analysis be performed using the 100-Year Storm Event Hydrograph to verify the depths of the floodplains shown to impact the project sites and ensure the proposed photovoltaic panel fields and any sensitive equipment will be elevated above the floodplain depths.

F. Sedimentation Calculations

Sediment calculations were performed for each of the existing conditions major drainage areas per the guidelines found in the Los Angeles County Public Works Department Sedimentation Manual (March 2006). These calculations are summarized on the following page.

Table 3 – Existing Conditions Hydrograph Calculations Summary – 50-Year/24-Hour Event

AREA NO.	SIZE (SQ. MILES)	DEBRIS PER SQ. MILE (CY)	TOTAL DEBRIS (CY)	REQ. MITIGATION
1	0.55	1,300 CY FOR ALL DRAINAGE AREAS WITHIN DPA-11, PER PAGE B-3 OF L.A. COUNTY SEDIMENTATION MANUAL.	716.22	INLET W/ BULKED FLOW DRAIN
1A	0.02		27.22	INLET W/ BULKED FLOW DRAIN
1B	0.06		71.50	INLET W/ BULKED FLOW DRAIN
2	4.05		5,263.78	DEBRIS BASIN
3	9.40		12,213.70	DEBRIS BASIN
4	1.34		1,744.64	DESILTING INLET
5	1.20		1,556.34	DESILTING INLET
6	0.95		1,239.27	DESILTING INLET
7	1.55		2,014.80	DESILTING INLET

Refer to *Attachment 7* for supporting sediment calculations and mitigation design requirements/ recommendations per the County Sedimentation Manual.

G. Information Regarding Antelope Valley Master Drainage Plan

The proposed project falls under the auspices of the Antelope Valley Final Report on the Comprehensive Plan of Flood Control and Water Conservation, dated June 1987. Per this document, the western site is impacted by two major drainage courses from the southwest as well as the natural drainage channel traversing the northern portion of the western site from west to east – this information is substantiated by the findings in this Preliminary Report.

Initial conversation with the County Public Works Department indicated that easements of varying widths would be required for these drainage courses (see exhibit found in *Attachment 8*). However, further discussion revealed that the drainage courses in question are labeled as "Flood Management Pathways", or FMPs, which do not require easements or the construction of any improvements. In e-mail correspondence dated May 19, 2010, the County indicated the following stipulations regarding these FMPs:

1.) *The proposed site project must not obstruct flows across the site*: It is not anticipated that the proposed elevated photovoltaic fields will result in any identifiable obstruction to the identified site flows.

2.) *The proposed project will not result in any downstream impacts*: The very low-impact nature of the development, minimal earthwork, and the absence of any significant increase in site imperviousness should prevent any adverse impacts to downstream conveyances.

Refer to *Attachment 8* for a copy of the May 19, 2010 e-mail correspondence with the County regarding the Antelope Valley Plan.

H. Recommendations

The recommendations on the following page pertain to the preparation of the Final Hydrology and Hydraulics Report for the Alpine project.

1. Conduct a topographic survey of Aqueduct Crossings 1 through 6 in order to perform an accurate Water Surface Pressure Gradient for Windows (WSPGW) analysis for each culvert to determine the losses through each crossing location (if any) that could potentially impact peak flows rates for the existing tributary areas.

2. Perform a Floodplain Analysis using FLO-2D or similar software to verify the depths of the floodplains shown to impact the project sites and ensure the proposed photovoltaic panel fields will be elevated above the floodplain depths.

3. Provide hydraulic analyses for any proposed street improvements pursuant to the final improvement plans for the project.

4. Revise developed on-site LAR04 and/or hydraulics calculations to match the final improvement plan(s) for the project.

5. Coordinate with the Los Angeles County Public Works Department to determine what measures, if any, will be required to mitigate the calculated sedimentation loads for the project watershed.

6. Coordinate with the Los Angeles County Public Works Department to ensure the project site is in accordance with all County SUSMP requirements. Also, coordinate with the Lahontan Regional Water Quality Control Board (RWQCB) to ensure the project is in accordance with all RWQCB requirements. In addition, prepare a Storm Water Pollution Prevention Plan (SWPPP) pursuant to National Pollutant Discharge Elimination System (NPDES) requirements for the construction phase of the project. A Notice of Intent (NOI) to the California State Water Quality Control Board (SWQCB) must also be submitted prior to the commencement of any construction activities.

Note: Refer to *Attachment 9* for a CD of this complete Preliminary Report (PDF format).

(END)

EXHIBIT “A”

Project Watershed Location

EXHIBIT "A"

PROJECT WATERSHED LOCATION

ALPINE SOLAR GENERATING STATION
IN THE COUNTY OF LOS ANGELES, CA

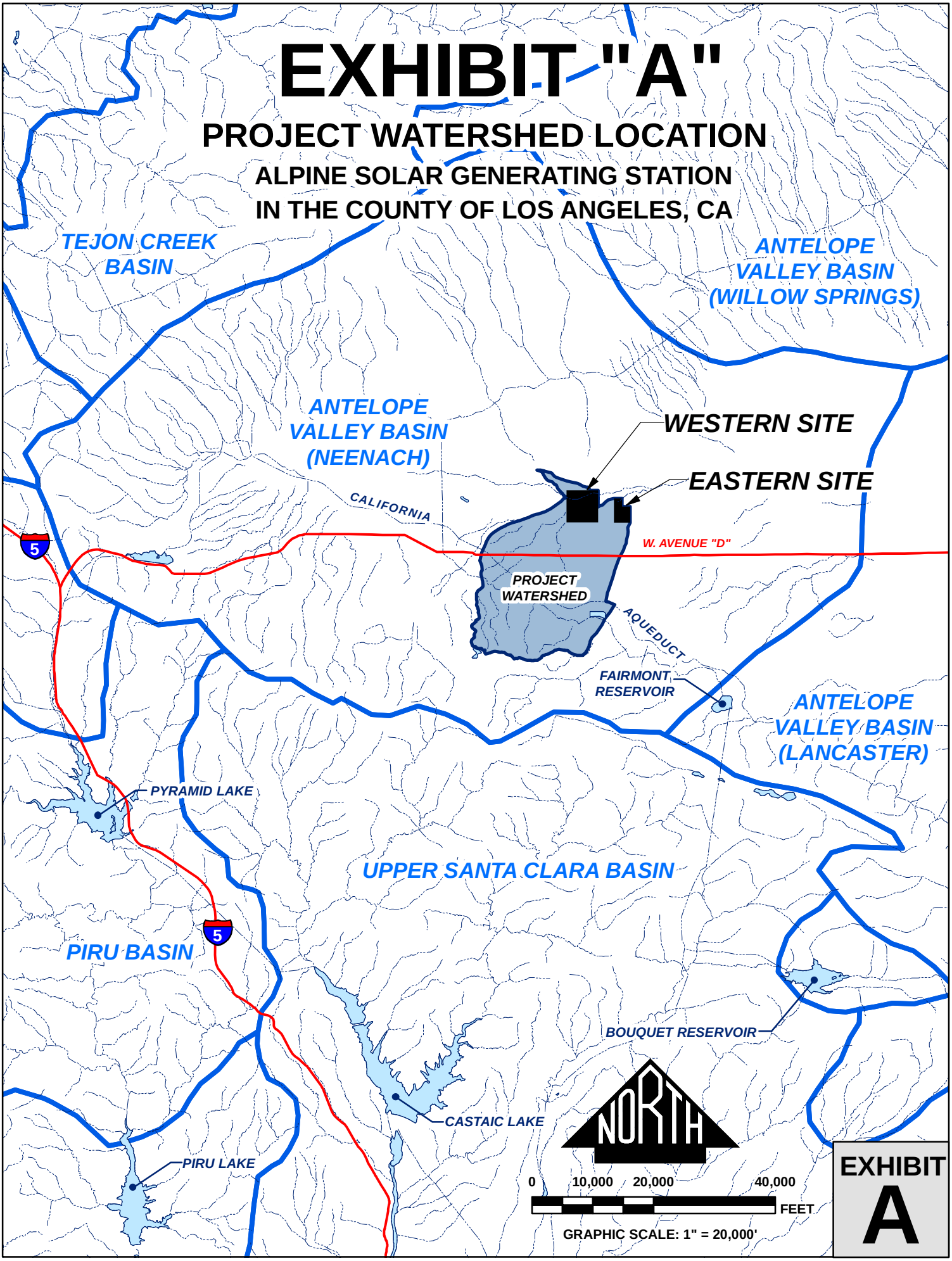
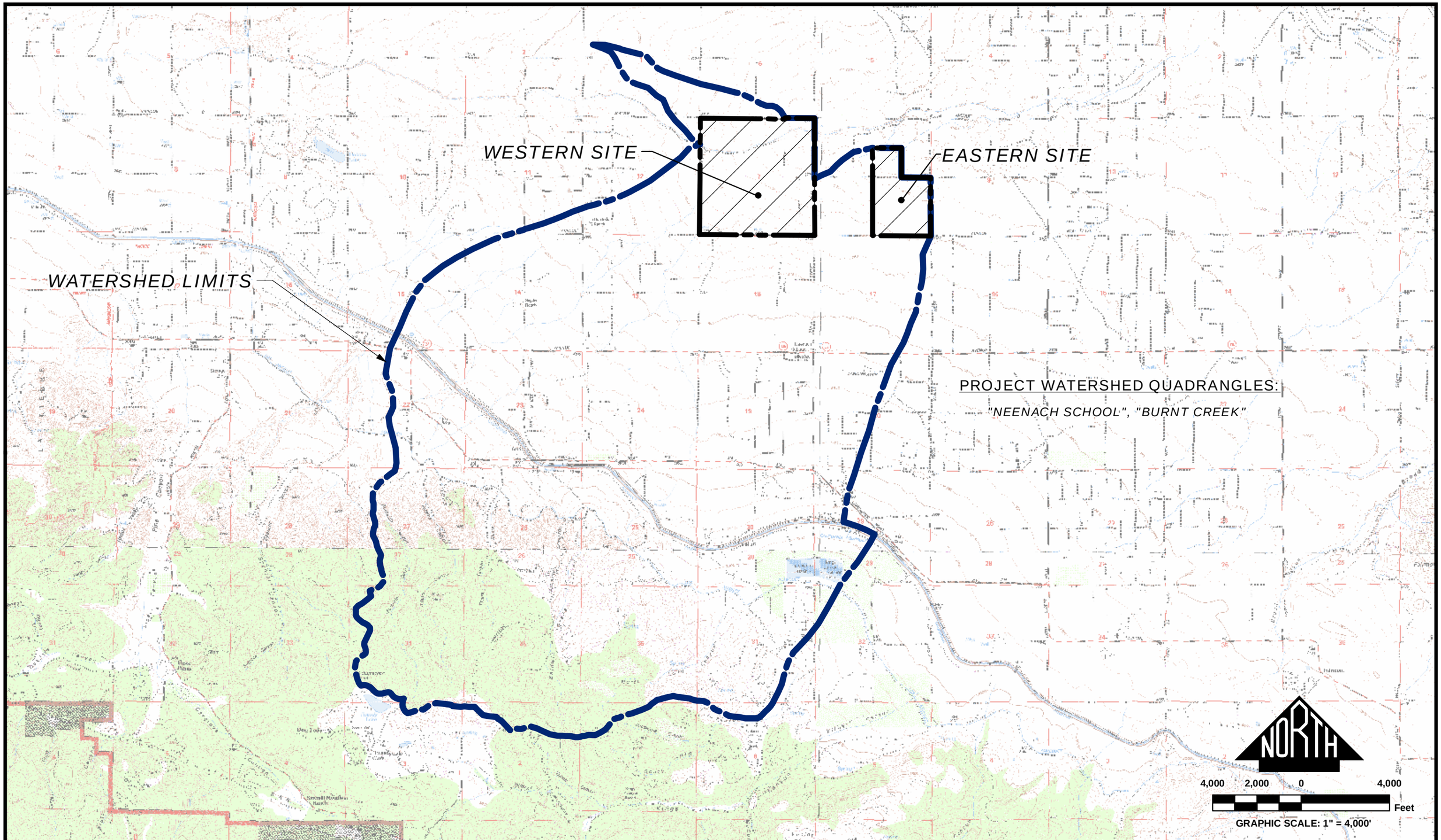


EXHIBIT “B”

Project Watershed – USGS Quadrangle



PARTIAL USGS QUADRANGLES EXHIBIT
ALPINE SOLAR GENERATING STATION
IN THE COUNTY OF LOS ANGELES, CA

JOSEPH E. BONADIMAN & ASSOCIATES, INC.
CIVIL ENGINEERING G.I.S. LAND SURVEYING
(909)594-8400 – FAX (909)594-1768

NRG

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JDN	1	ENTIRE EXHIBIT	04-19-10

PREPARED FOR:	NRG ENERGY
JOB NO:	093543
PREPARED BY:	JDN
CHECKED BY:	DWJ

NOTE: *Joseph E. Bonadiman & Associates, Inc. does not warranty the accuracy of the G.I.S. data presented in this Exhibit. This Exhibit may contain information copyrighted to the County of Los Angeles.*

PARTIAL USGS QUADRANGLES EXHIBIT
ALPINE SOLAR GENERATING STATION
IN THE COUNTY OF LOS ANGELES, CA

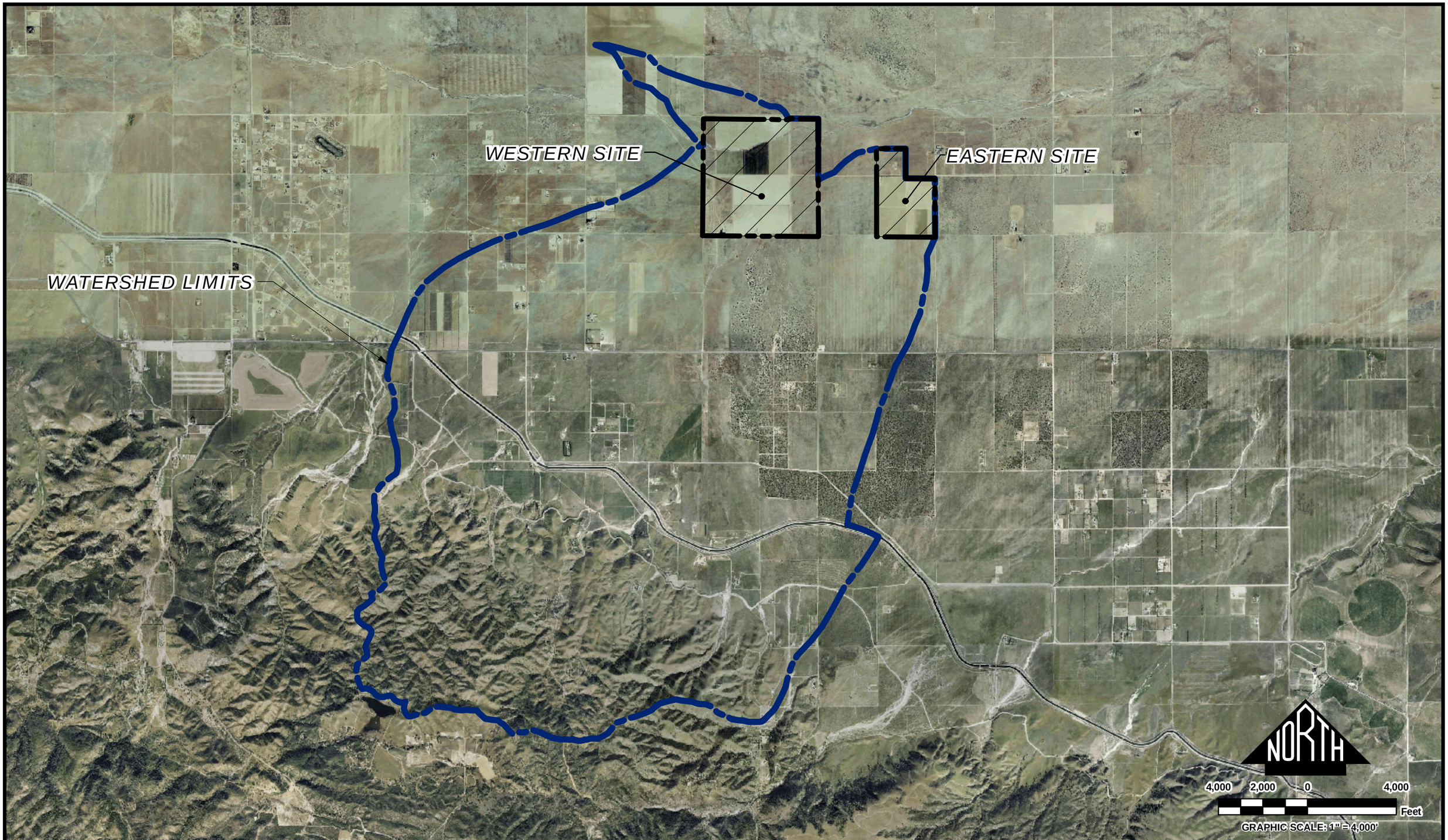
DISREGARD PRINTS BEARING EARLIER REVISION DATES → 04-19-10

B

SHEET: 1 OF 1

EXHIBIT “C”

Project Watershed – Aerial Orthophoto



AERIAL ORTHOPHOTO EXHIBIT
ALPINE SOLAR GENERATING STATION
IN THE COUNTY OF LOS ANGELES, CA

JOSEPH E. BONADIMAN & ASSOCIATES, INC.
CIVIL ENGINEERING G.I.S. LAND SURVEYING
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JDN	1	ENTIRE EXHIBIT	04-19-10

PREPARED FOR:	NRG ENERGY
JOB NO:	093543
PREPARED BY:	JDN
CHECKED BY:	DWJ

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AERIAL ORTHOPHOTO EXHIBIT
ALPINE SOLAR GENERATING STATION
IN THE COUNTY OF LOS ANGELES, CA

DISREGARD PRINTS BEARING EARLIER REVISION DATES → 04-19-10

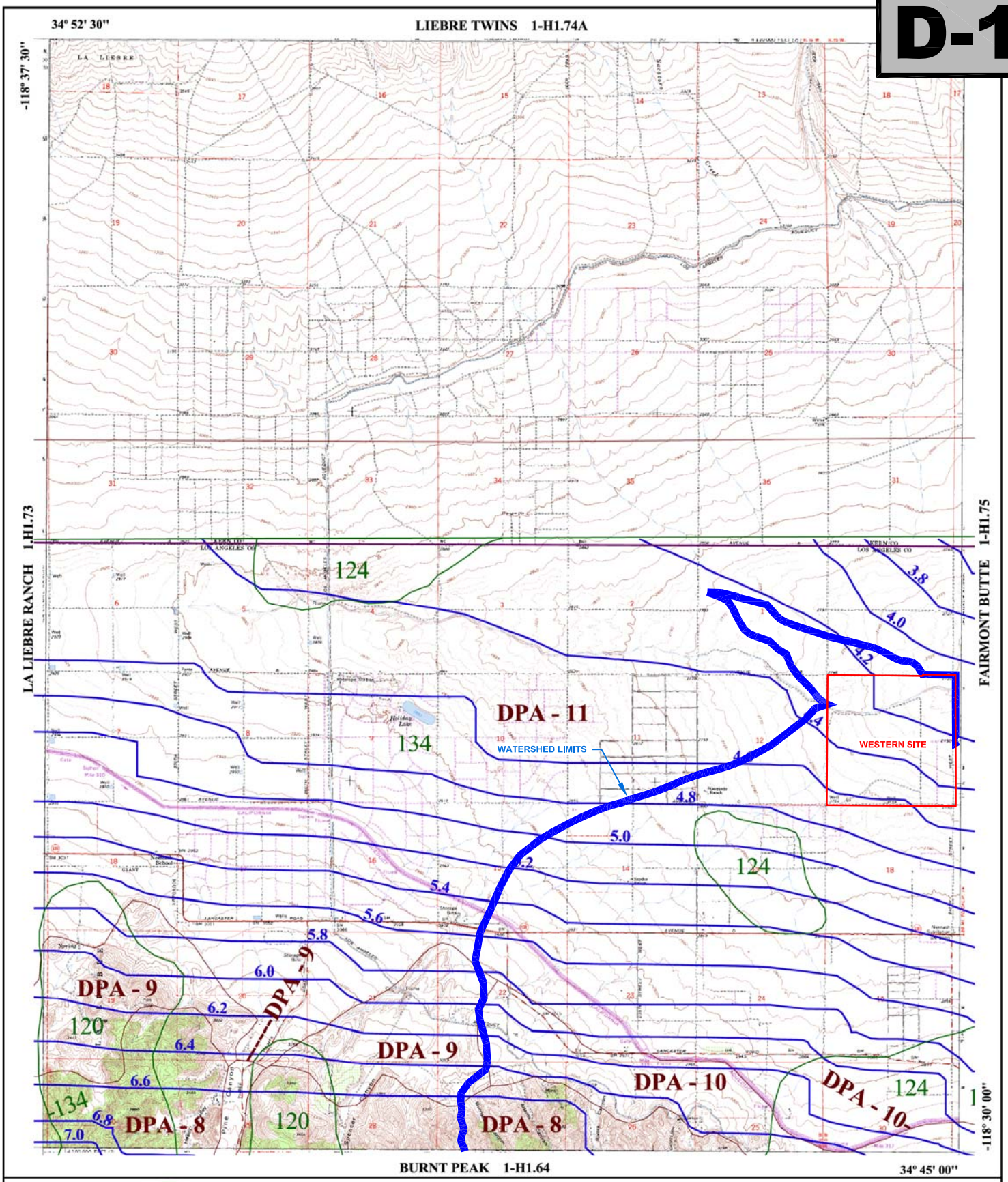
C

SHEET: 1 OF 1

EXHIBIT “D”

Applicable Los Angeles County
Soil/Rainfall/DPA Zone Maps

EXHIBIT D-1



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

N S E W

1 0 1 2 Miles

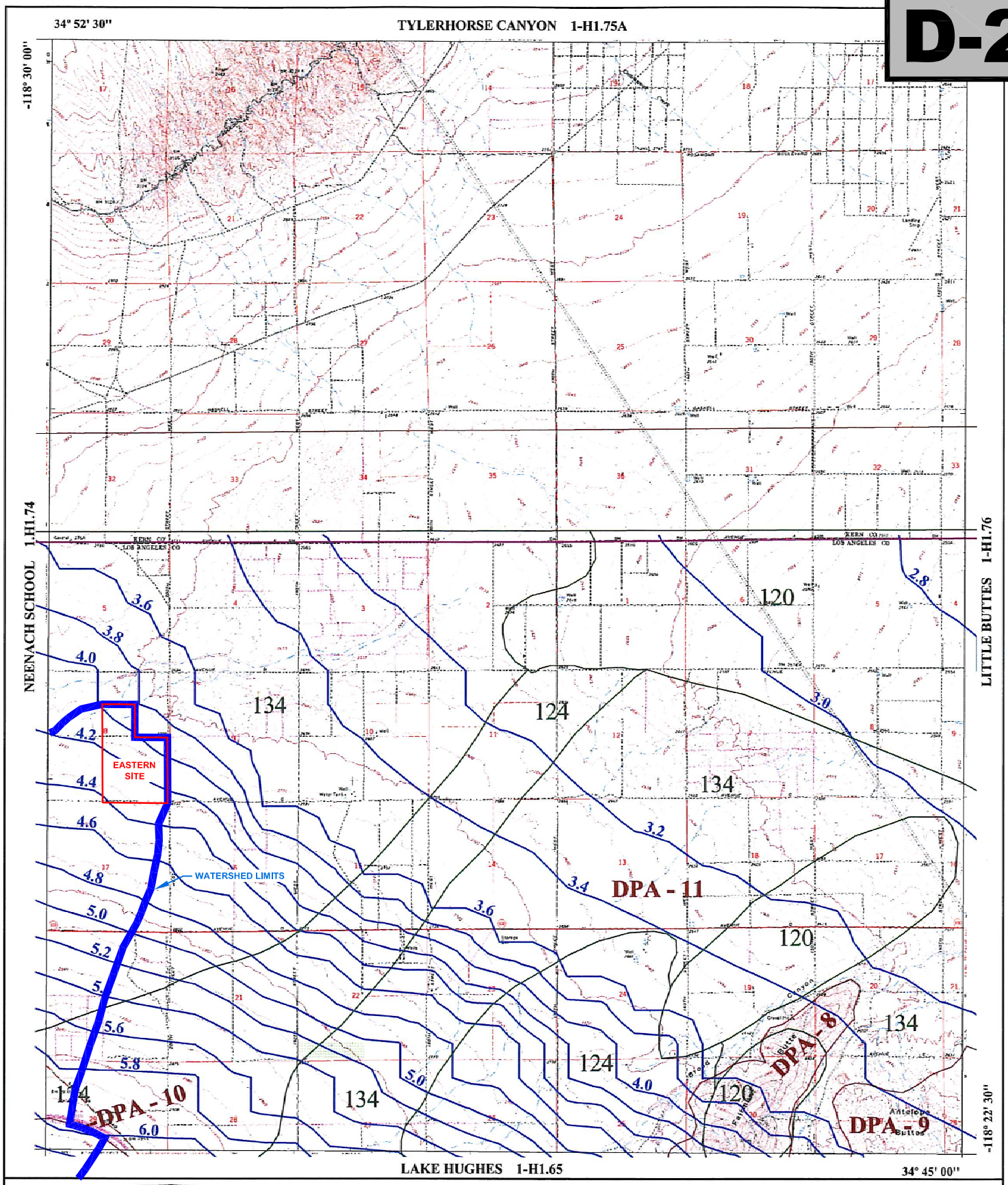
25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

NEENACH SCHOOL
50-YEAR 24-HOUR ISOHYET

1-H1.74

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

EXHIBIT D-2



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

1 0 1 2 Miles

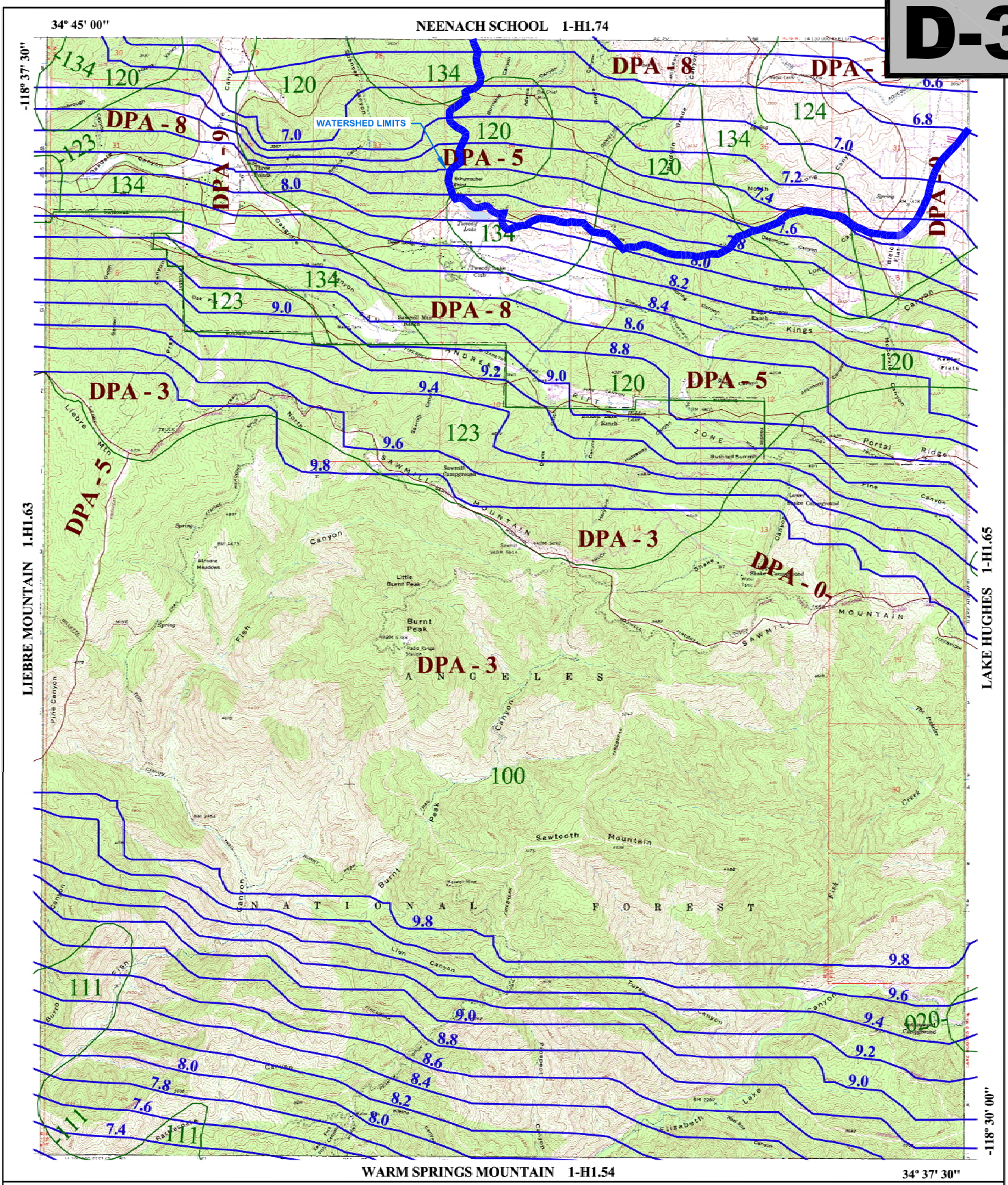
25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

FAIRMONT BUTTE 50-YEAR 24-HOUR ISOHYET

1-H1.75

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

EXHIBIT D-3



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

N W E S

1 0 1 2 Miles

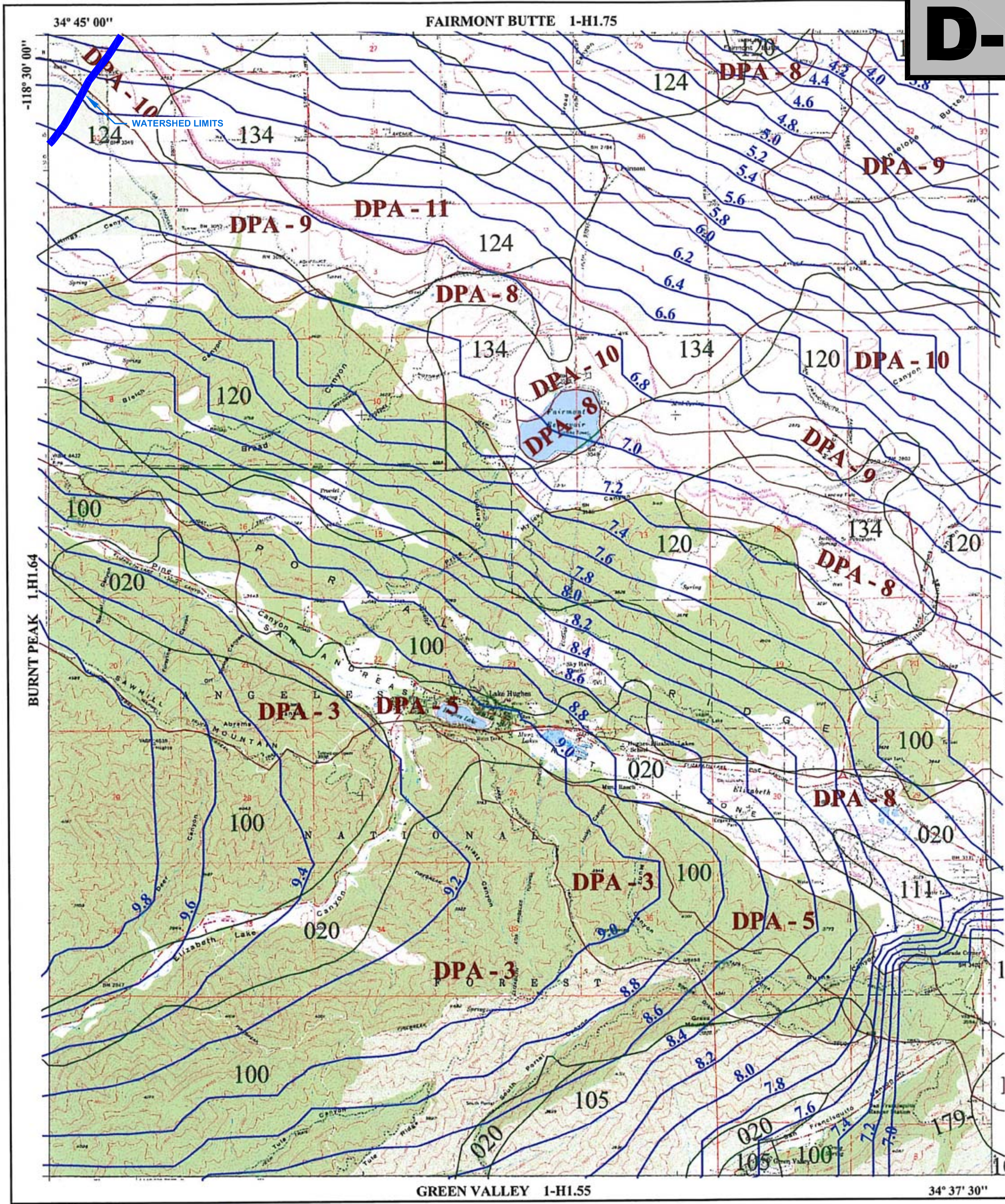
25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

BURNT PEAK
50-YEAR 24-HOUR ISOHYET

1-H1.64

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

EXHIBIT D-4



016	SOIL CLASSIFICATION AREA
7.2	INCHES OF RAINFALL
DPA - 6	DEBRIS POTENTIAL AREA

1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

LAKE HUGHES
50-YEAR 24-HOUR ISOHYET

1-H1.65

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

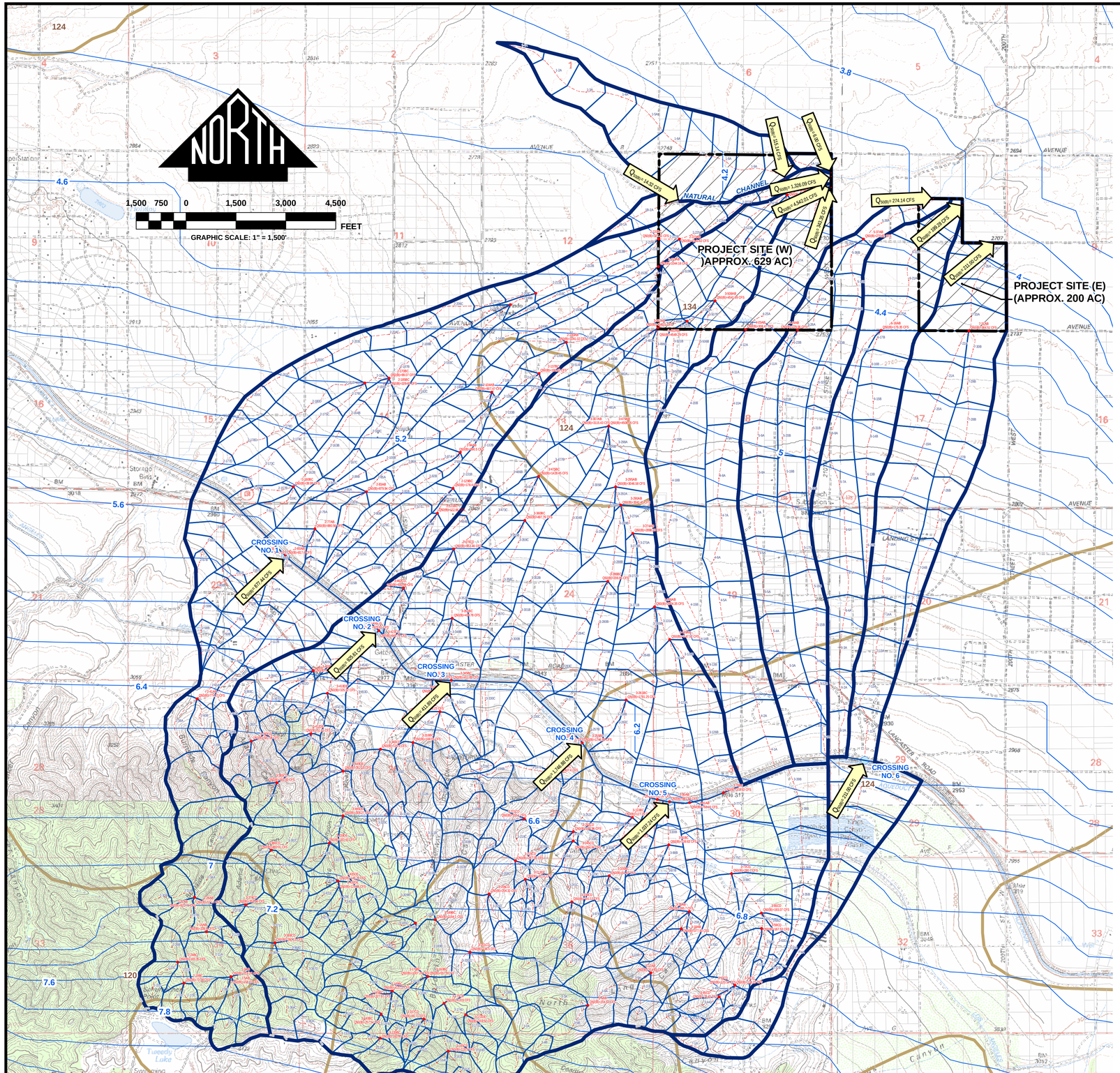
EXHIBIT “E”

Existing Hydrologic Conditions
Study Map

EXHIBIT "E"

EXISTING CONDITIONS HYDROLOGY STUDY MAP

ALPINE SOLAR GENERATING STATION IN LOS ANGELES COUNTY, CA



LAR04 CALCULATIONS SUMMARY (50-YEAR EVENT)

1	352.60	1-11A	DISCHARGE TO EXISTING EARTHEN CHANNEL	25.41	115.14
1A	13.40	1A-2	WESTERN BOUNDARY OF WESTERN SITE	1.56	6.00
1B	35.20	1B-4	DISCHARGE TO EXISTING EARTHEN CHANNEL	3.44	14.32
2	826.40	2-72AB	AQUEDUCT CROSSING NO. 1	513.12	877.44
2	2,591.40	2-230A	DISCHARGE TO EXISTING EARTHEN CHANNEL	527.22	1,326.09
3	989.40	3-456CD	AQUEDUCT CROSSING NO. 2	448.18	925.61
3	444.20	3-345BC	AQUEDUCT CROSSING NO. 3	171.78	411.89
3	1,268.60	3-255BC	AQUEDUCT CROSSING NO. 4	1,151.40	1,746.88
3	1,204.90	3-119AB	AQUEDUCT CROSSING NO. 5	402.01	1,037.24
3	6,012.90	3-527A	WESTERN BOUNDARY OF WESTERN SITE	1,866.75	4,542.01
4	858.90	4-30A	WESTERN BOUNDARY OF WESTERN SITE	84.76	343.35
5	766.20	5-41A	NORTHERN BOUNDARY OF EASTERN SITE	66.48	274.14
6	610.10	6-25A	NORTHEAST BOUNDARY OF EASTERN SITE	44.72	199.28
7	282.80	7-10A	AQUEDUCT CROSSING NO. 6	72.59	211.00
7	991.90	7-37A	NORTHEAST BOUNDARY OF EASTERN SITE	95.79	395.83

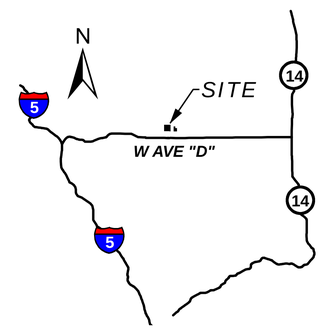
LAR05 UNIT HYDROGRAPHS SUMMARY

1	352.60	12.94	50.17
1A	13.40	0.49	1.90
1B	35.20	1.33	5.24
2	2,591.40	146.30	503.56
3	6,012.90	399.90	1336.14
4	858.90	41.06	154.95
5	766.20	36.49	137.48
6	610.10	26.48	101.27
7	991.90	48.49	183.30
TOTAL:	**12,232.60**	**713.48**	**2,474.01**

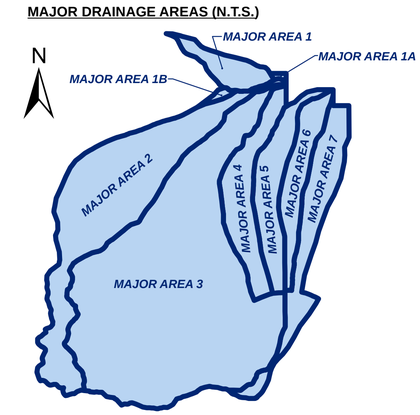
MAP LEGEND

- DRAINAGE SUBAREA LOCATIONS
- CONFLUENCE LOCATIONS
- MAJOR DRAINAGE AREAS
- DRAINAGE SUBAREAS
- 100' INDEX CONTOURS (USGS)
- 20' INTERVAL CONTOURS (USGS)
- AQUEDUCT CROSSINGS
- FLOW PATHS
- ISOHYETALS (50-YEAR/24-HOUR)
- SOIL CLASSES

VICINITY MAP (N.T.S.)



MAJOR DRAINAGE AREAS (N.T.S.)



EXISTING CONDITIONS HYDROLOGY STUDY MAP
ALPINE SOLAR GENERATING STATION
IN THE COUNTY OF LOS ANGELES, CA

JOSEPH E. BONADIMAN & ASSOCIATES, INC.
CONSULTING ENGINEERS
INFRASTRUCTURE · RISK · SUSTAINABILITY

CALCULATIONS PERFORMED WITH SOFTWARE PROVIDED BY:
CIVILDESIGN

BY	MARK	REVISION DESCRIPTION	DATE
JDN	1	ENTIRE EXHIBIT	04-19-10

PREPARED FOR:	NRG ENERGY
JOB NO:	093043
PREPARED BY:	JDN
CHECKED BY:	DWJ

NOTE: Joseph E. Bonadiman & Associates, Inc. does not warranty the accuracy of the information shown on this exhibit. This Exhibit may contain information copyrighted by the County of Los Angeles.

DISREGARD PRINTS BEARING EARLIER REVISION DATES → 04-19-10

EXISTING CONDITIONS HYDROLOGY STUDY MAP
ALPINE SOLAR GENERATING STATION
IN THE COUNTY OF LOS ANGELES, CA

E

SHEET: 1 OF 1

EXHIBIT “F”

FEMA Floodplain Maps

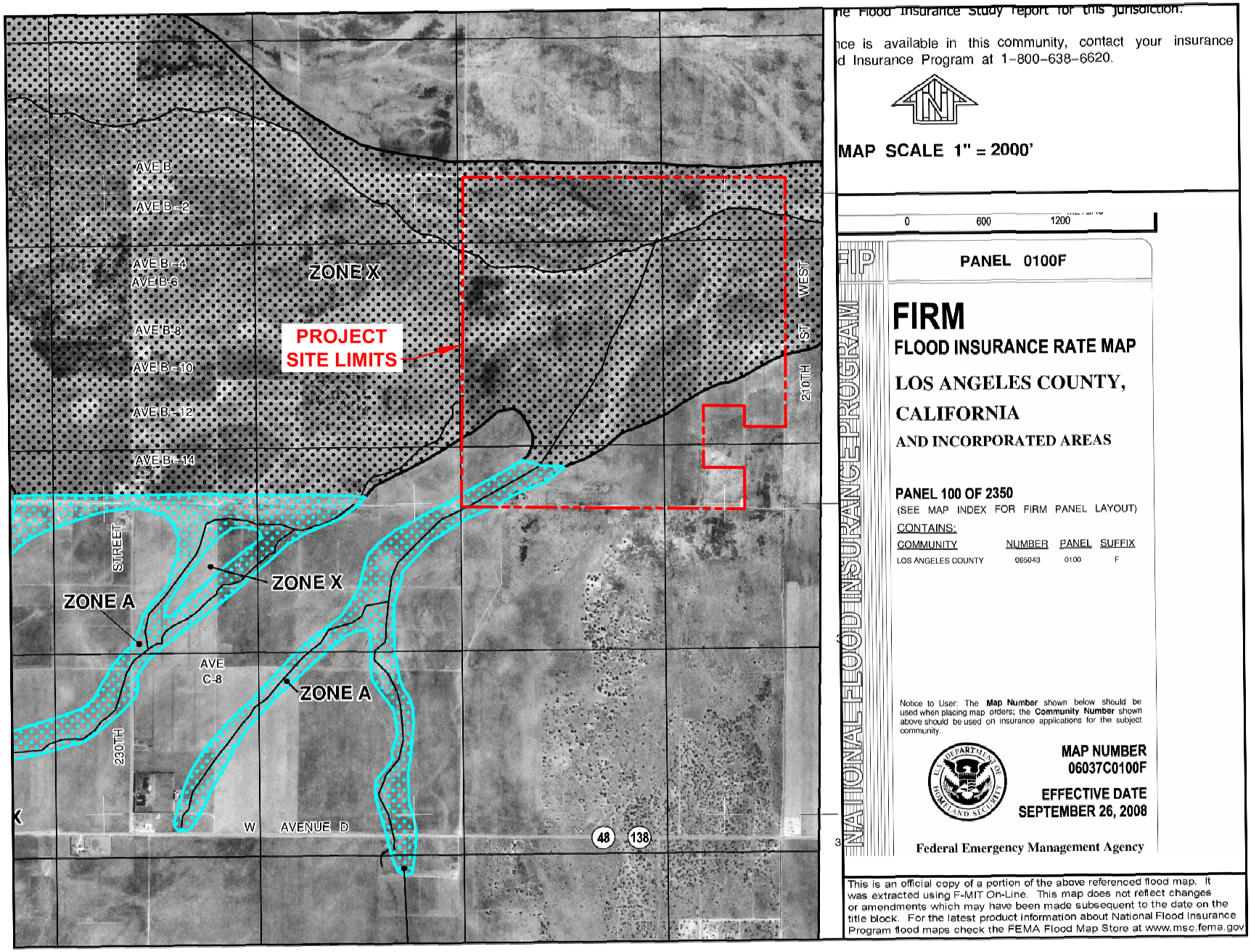


EXHIBIT "F-1" - PARTIAL FEMA FLOODPLAIN MAP

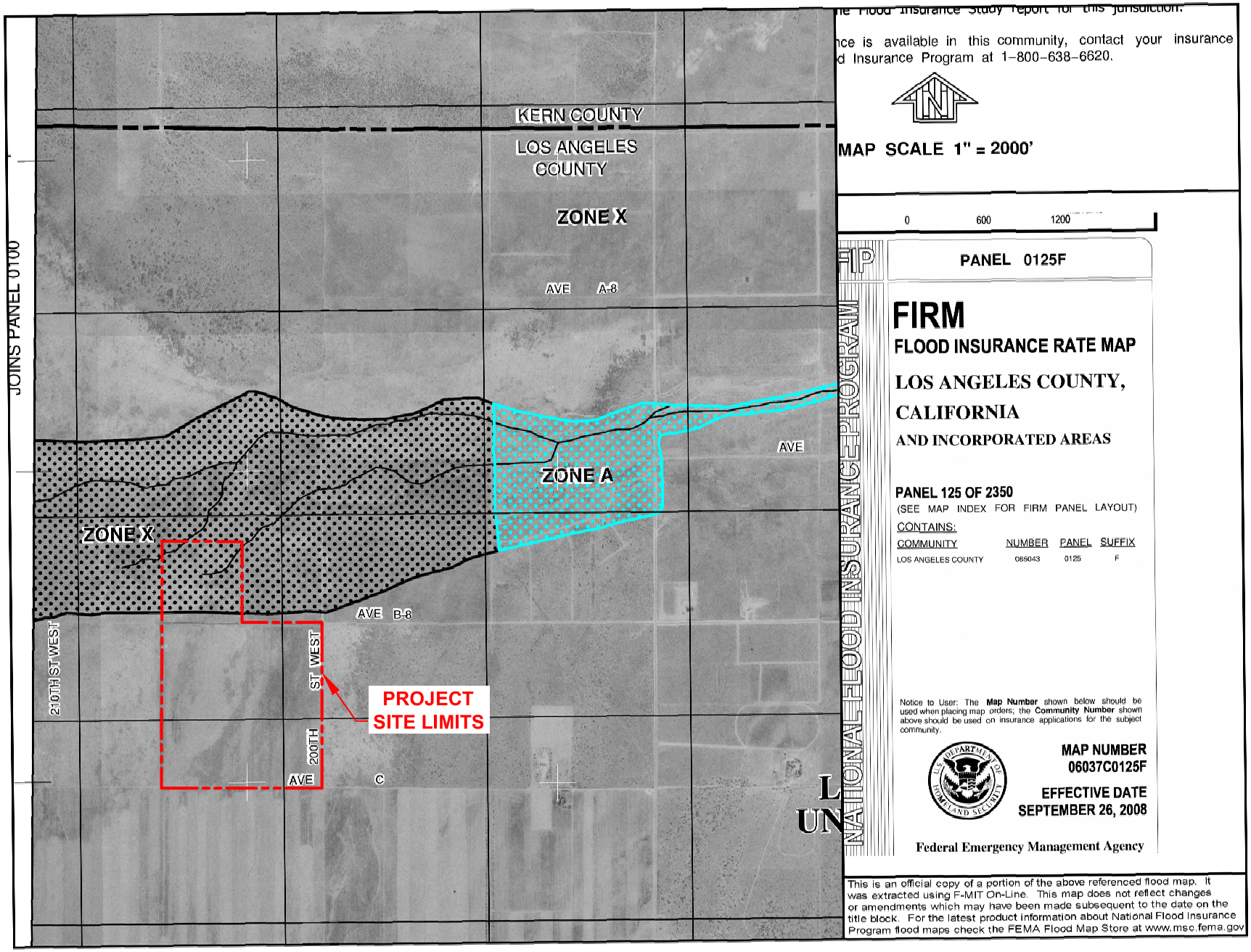


EXHIBIT "F-2" - PARTIAL FEMA FLOODPLAIN MAP

ATTACHMENT 1

Existing Conditions
Time of Concentration (TC) Calculations

AREA 1 - TIME OF CONCENTRATION (TC) CALCULATIONS

Project	Subarea	Area (acres	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.	Tc-calculat	Intensity (ir	Cu	Cd	Flowrate (c	Tc Equation
ALPINE	1-1A	7.66153	0.01	50	134	1485.514	0.006577	4.239651	30	1.09	0.1	0.11	0.92	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	1-2A	26.00888	0.01	50	134	1086.83	0.004715	4.257566	30	1.09	0.1	0.11	3.12	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	1-3A	26.73185	0.01	50	134	1193.252	0.004981	4.270653	30	1.1	0.1	0.11	3.23	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	1-4A	28.21106	0.01	50	134	999.8848	0.003787	4.250641	30	1.09	0.1	0.11	3.38	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	1-5A	45.00226	0.01	50	134	1156.947	0.004819	4.245829	30	1.09	0.1	0.11	5.4	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	1-6A	46.49516	0.01	50	134	857.3414	0.007395	4.239085	30	1.09	0.1	0.11	5.57	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	1-7A	57.43627	0.01	50	134	874.6904	0.007283	4.220686	30	1.08	0.1	0.11	6.82	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	1-8A	51.08429	0.01	50	134	827.5681	0.004437	4.200362	30	1.08	0.1	0.11	6.07	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	1-9A	38.43101	0.01	50	134	889.4651	0.004373	4.158876	30	1.07	0.1	0.11	4.52	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	1-10A	25.56372	0.01	50	134	679.1723	0.003913	4.136697	30	1.06	0.1	0.11	2.98	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135

AREA 1A - TIME OF CONCENTRATION (TC) CALCULATIONS

Project	Subarea	Area (acres	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.	Tc-calculat	Intensity (ir	Cu	Cd	Flowrate (c	Tc Equation
ALPINE	1A-1A	13.35874	0.01	50	134	1347.105	0.008072	4.109709	30	1.06	0.1	0.11	1.56	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135

AREA 1B - TIME OF CONCENTRATION (TC) CALCULATIONS

Project	Subarea	Area (acres	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.	Tc-calculat	Intensity (ir	Cu	Cd	Flowrate (c	Tc Equation
ALPINE	1B-1A	8.740322	0.01	50	134	926.9752	0.006044	4.439669	30	1.14	0.1	0.11	1.1	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	1B-2A	15.94055	0.01	50	134	907.7776	0.005787	4.37955	30	1.13	0.1	0.11	1.98	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	1B-3A	10.62792	0.01	50	134	660.0599	0.008596	4.321582	30	1.11	0.1	0.11	1.3	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135

AREA 2 - TIME OF CONCENTRATION (TC) CALCULATIONS

Project	Subarea	Area (acres	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.	Tc-calculat	Intensity (ir	Cu	Cd	Flowrate (c	Tc Equation
ALPINE	2-1A	13.9024	0.01	50	134	407.8501	.16339	7.8	5	4.65	0.59	0.59	38.14	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-2A	12.99527	0.01	50	134	1284.203	.14000	7.6	11	3.13	0.47	0.47	19.12	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-3B	15.76286	0.01	50	134	537.1113	.16873	7.8	5	4.65	0.59	0.59	43.25	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-4B	24.30041	0.01	50	134	1362.171	.11857	7.6	11	3.13	0.47	0.47	35.75	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-7B	7.089695	0.01	50	134	553.8108	.16719	7.8	5	4.65	0.59	0.59	19.45	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-8B	14.16122	0.01	50	120	1079.327	.16394	7.6	7	3.87	0.7	0.7	38.36	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-11A	50.55485	0.01	50	120	1574.623	.07659	7.4	11	3.05	0.65	0.65	100.22	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-12B	8.25462	0.01	50	120	818.9217	.24940	7.4	5	4.42	0.73	0.73	26.63	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-13B	6.00905	0.01	50	120	473.1939	.10945	7.4	5	4.42	0.73	0.73	19.39	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-16A	12.46284	0.01	50	120	1132.771	.06226	7.2	9	3.26	0.66	0.66	26.82	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-17B	10.94893	0.01	50	120	919.2615	.15512	7.8	6	4.27	0.72	0.72	33.66	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-18C	12.60741	0.01	50	120	1025.003	.13550	7.8	7	3.97	0.71	0.71	35.54	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-21B	8.394122	0.01	50	120	663.4766	.12042	7.6	5	4.53	0.74	0.74	28.14	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-22C	11.58058	0.01	50	120	745.1109	.15132	7.6	6	4.16	0.72	0.72	34.69	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-23C	13.98411	0.01	50	120	793.2213	.10760	7.6	6	4.16	0.72	0.72	41.89	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-26B	18.99132	0.01	50	120	1005.703	.13251	7.4	7	3.77	0.7	0.7	50.12	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-27B	19.35961	0.01	50	120	1258.454	.08740	7.2	9	3.26	0.66	0.66	41.65	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-30B	17.12288	0.01	50	120	773.276	.19691	7.2	6	3.94	0.71	0.71	47.9	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-31B	18.6595	0.01	50	120	789.8209	.14025	7.2	6	3.94	0.71	0.71	52.2	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-34A	34.01414	0.01	50	120	1316.758	.06084	7	11	2.88	0.63	0.63	61.72	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-35A	34.63725	0.01	50	134	1247.1	.07592	7	13	2.67	0.42	0.42	38.84	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-36A	41.73623	0.01	50	134	731.439	.06978	6.8	9	3.08	0.46	0.46	59.13	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-37A	53.13443	0.01	50	134	1685.771	.05585	6.8	19	2.17	0.34	0.35	40.36	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-38A	31.6118	0.01	50	134	1997.051	.03319	6.6	29	1.72	0.26	0.27	14.68	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-39B	8.929679	0.01	50	134	733.2847	.18097	6.6	8	3.16	0.47	0.47	13.26	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-40B	17.24625	0.01	50	134	1225.524	.08231	6.6	13	2.51	0.4	0.41	17.75	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-43A	15.82319	0.01	50	134	1075.811	.02170	6.4	18	2.09	0.32	0.33	10.91	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-44A	16.58517	0.01	50	134	925.7251	.02751	6.2	16	2.14	0.34	0.35	12.42	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-45A	15.03653	0.01	50	134	755.6956	.02341	6	15	2.14	0.33	0.34	10.94	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-46A	13.17595	0.01	50	134	872.8481	.02930	5.8	17	1.95	0.3	0.31	7.96	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-47A	14.92575	0.01	50	134	800.2299	.03467	5.8	15	2.06	0.32	0.33	10.15	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-48A	17.85366	0.01	50	134	835.9565	.02619	5.6	18	1.83	0.28	0.29	9.47	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-49B	2.387334	0.01	50	134	542.696	.02719	6.2	10	2.67	0.42	0.42	2.68	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-50B	6.467271	0.01	50	134	651.7423	.03398	6.2	11	2.55	0.4	0.41	6.76	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-51B	9.229906	0.01	50	134	585.2615	.03107	6	11	2.47	0.39	0.4	9.12	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-52B	11.75086	0.01	50	134	586.3812	.03982	5.8	11	2.39	0.38	0.39	10.95	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-53B	8.813671	0.01	50	134	763.32	.03509	5.8	14	2.13	0.33	0.34	6.38	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-54B	2.991971	0.01	50	134	907.9602	.02600	5.6	20	1.74	0.26	0.27	1.41	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-57B	3.397925	0.01	50	134	686.028	.02217	6.2	12	2.45	0.39	0.4	3.33	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-58B	7.451476	0.01	50	134	673.4321	.03337	6.2	12	2.45	0.39	0.4	7.3	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-59B	12.90503	0.01	50	134	656.2607	.03216	6	12	2.37	0.37	0.38	11.62	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-60B	20.48191	0.01	50	134	892.6568	.02686	5.8	18	1.9	0.29	0.3	11.67	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-61B	9.164923	0.01	50	134	530.9141	.02277	5.8	12	2.29	0.36	0.37	7.77	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-62B	9.312669	0.01	50	134	496.0351	.03109	5.8	10	2.5	0.39	0.4	9.31	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-63B	8.987874	0.01	50	134	458.2884	.03953	5.8	9	2.63	0.41	0.41	9.69	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-64B	8.143144	0.01	50	134	416.3081	.00951	5.6	12	2.21	0.34	0.35	6.3	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-67B	10.22245	0.01	50	134	834.1956	.02935	5.8	16	2	0.31	0.32	6.54	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-68B	17.23195	0.01	50	134	435.6009	.03224	5.8	9	2.63	0.41	0.41	18.58	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-69B	18.74524	0.01	50	134	565.7712	.02234	5.6	13	2.13	0.34	0.35	13.97	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-70B	46.8255	0.01	50	134	643.5986	.02458	5.6	14	2.06	0.32	0.33	31.83	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-74A	22.82154	0.01	50	134	1259.248	.02178	5.6	30	1.44	0.17	0.18	5.92	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-75B	6.912954	0.01	50	134	346.7576	.03217	5.6	8	2.68	0.42	0.42	7.78	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135

AREA 2 - TIME OF CONCENTRATION (TC) CALCULATIONS

ALPINE	2-76B	10.48168	0.01	50	134	830.5014	.02383	5.6	19	1.78	0.27	0.28	5.22	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-79A	30.73799	0.01	50	134	923.266	.02043	5.4	30	1.39	0.16	0.17	7.26	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-80A	11.6123	0.01	50	134	1384.986	.01322	5.4	30	1.39	0.16	0.17	2.74	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-81B	6.753143	0.01	50	134	723.5953	.02532	5.6	15	1.99	0.31	0.32	4.3	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-82B	13.54099	0.01	50	134	1285.154	.02168	5.4	30	1.39	0.16	0.17	3.2	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-85A	15.22687	0.01	50	134	992.5801	.01750	5.4	30	1.39	0.16	0.17	3.6	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-86A	15.99909	0.01	50	134	1163.733	.01583	5.2	30	1.34	0.14	0.15	3.22	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-87A	11.71151	0.01	50	134	1083.682	.01507	5.2	30	1.34	0.14	0.15	2.35	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-88B	4.508499	0.01	50	134	635.4987	.02460	5.6	14	2.06	0.32	0.33	3.06	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-89B	6.351311	0.01	50	134	841.8583	.02703	5.6	18	1.83	0.28	0.29	3.37	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-90B	12.49606	0.01	50	134	1180.513	.02378	5.4	30	1.39	0.16	0.17	2.95	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-91B	10.63005	0.01	50	134	993.8864	.01949	5.4	30	1.39	0.16	0.17	2.51	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-92B	8.821669	0.01	50	134	903.3517	.01708	5.4	30	1.39	0.16	0.17	2.08	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-93B	5.184477	0.01	50	134	828.9524	.01516	5.2	30	1.34	0.14	0.15	1.04	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-96A	12.01445	0.01	50	134	837.5656	.01013	5.2	30	1.34	0.14	0.15	2.41	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-97A	5.713708	0.01	50	134	854.8991	.01310	5.2	30	1.34	0.14	0.15	1.15	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-98A	1.170439	0.01	50	124	442.0413	.00831	5	30	1.29	0.1	0.11	0.17	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-99B	9.250231	0.01	50	134	998.2348	.01536	5.4	30	1.39	0.16	0.17	2.19	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-100B	15.6809	0.01	50	134	1389.987	.01547	5.2	30	1.34	0.14	0.15	3.15	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-101B	18.32622	0.01	50	134	1138.633	.01683	5.2	30	1.34	0.14	0.15	3.68	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-102B	25.40982	0.01	50	134	1058.604	.01385	5.2	30	1.34	0.14	0.15	5.11	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-103B	17.69497	0.01	50	134	930.6333	.01281	5	30	1.29	0.13	0.14	3.2	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-106A	16.36496	0.01	50	124	810.6643	.01185	5	30	1.29	0.1	0.11	2.32	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-107A	15.9935	0.01	50	124	1071.466	.01048	4.8	30	1.23	0.1	0.11	2.16	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-108A	13.53291	0.01	50	134	1180.158	.00865	4.8	30	1.23	0.11	0.12	2	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-109B	4.660954	0.01	50	134	248.5372	.21274	6.6	5	3.94	0.54	0.54	9.92	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-110B	12.68003	0.01	50	134	941.0011	.07483	6.6	12	2.61	0.41	0.41	13.57	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-111B	12.15034	0.01	50	134	1503.067	.02325	6.4	25	1.79	0.27	0.28	6.09	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-112B	31.61316	0.01	50	134	1949.909	.02481	6	30	1.54	0.2	0.21	10.22	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-113B	25.6457	0.01	50	134	732.3684	.03272	5.8	14	2.13	0.33	0.34	18.57	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-114B	27.24788	0.01	50	134	825.51	.02638	5.8	16	2	0.31	0.32	17.44	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-115B	19.67361	0.01	50	134	968.3665	.02227	5.8	21	1.76	0.27	0.28	9.7	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-116B	12.73083	0.01	50	134	829.9284	.02372	5.6	19	1.78	0.27	0.28	6.35	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-117B	15.17219	0.01	50	134	1193.361	.02652	5.6	30	1.44	0.17	0.18	3.93	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-118B	7.156254	0.01	50	134	1110.263	.01755	5.6	30	1.44	0.17	0.18	1.85	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-119C	10.27125	0.01	50	134	507.1012	.02527	5.6	12	2.21	0.34	0.35	7.94	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-120C	12.51123	0.01	50	134	1320.886	.01914	5.6	30	1.44	0.17	0.18	3.24	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-123B	12.45439	0.01	50	134	888.2991	.01680	5.4	30	1.39	0.16	0.17	2.94	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-124C	8.258292	0.01	50	134	483.9485	.02702	5.6	11	2.31	0.36	0.37	7.06	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-125C	15.51171	0.01	50	134	961.4657	.02641	5.6	21	1.7	0.25	0.26	6.86	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-126C	22.02082	0.01	50	134	1258.183	.02513	5.6	30	1.44	0.17	0.18	5.71	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-127C	18.05153	0.01	50	134	1116.645	.01701	5.4	30	1.39	0.16	0.17	4.27	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-128C	9.777339	0.01	50	134	819.5036	.01625	5.4	27	1.46	0.18	0.19	2.71	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-131B	18.64156	0.01	50	134	911.8663	.01467	5.4	30	1.39	0.16	0.17	4.41	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-132B	18.72783	0.01	50	134	1274.069	.01221	5.2	30	1.34	0.14	0.15	3.76	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-133B	17.38121	0.01	50	124	1102.878	.01178	5.2	30	1.34	0.1	0.11	2.56	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-134B	10.78439	0.01	50	124	1118.297	.01170	5	30	1.29	0.1	0.11	1.53	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-135C	6.422216	0.01	50	124	1000.864	.01083	5	30	1.29	0.1	0.11	0.91	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-136C	7.944078	0.01	50	124	833.3302	.01192	5	30	1.29	0.1	0.11	1.13	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-139B	19.94446	0.01	50	124	1292.684	.01079	4.8	30	1.23	0.1	0.11	2.7	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-142A	26.6976	0.01	50	134	1237.161	.00746	4.8	30	1.23	0.11	0.12	3.94	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-143A	22.5199	0.01	50	134	1252.539	.00681	4.6	30	1.18	0.1	0.11	2.92	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-144A	11.41168	0.01	50	134	1053.199	.00644	4.6	30	1.18	0.1	0.11	1.48	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135

AREA 2 - TIME OF CONCENTRATION (TC) CALCULATIONS

ALPINE	2-145A	2.782782	0.01	50	134	454.5917	.00290	4.6	30	1.18	0.1	0.11	0.36	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-146B	5.484285	0.01	50	134	845.1467	.01594	5	30	1.29	0.13	0.14	0.99	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-147B	11.94237	0.01	50	134	960.1447	.01224	5	30	1.29	0.13	0.14	2.16	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-148B	21.09551	0.01	50	134	1305.21	.01095	4.8	30	1.23	0.11	0.12	3.11	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-149B	17.12733	0.01	50	134	1172.799	.00987	4.8	30	1.23	0.11	0.12	2.53	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-150B	17.2887	0.01	50	134	1139.744	.00683	4.8	30	1.23	0.11	0.12	2.55	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-151B	12.40142	0.01	50	134	1025.621	.00827	4.6	30	1.18	0.1	0.11	1.61	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-152B	14.38101	0.01	50	134	1356.498	.00672	4.6	30	1.18	0.1	0.11	1.87	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-155A	6.8	0.01	50	134	1038	.00510	4.4	30	1.13	0.1	0.11	0.85	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-156B	9.734736	0.01	50	134	481.3497	.01278	5.4	14	1.99	0.31	0.32	6.2	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-157B	9.425193	0.01	50	134	991.933	.02103	5.4	30	1.39	0.16	0.17	2.23	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-158C	13.27141	0.01	50	134	470.942	.02540	5.6	11	2.31	0.36	0.37	11.34	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-159C	12.55808	0.01	50	134	982.362	.02330	5.4	30	1.39	0.16	0.17	2.97	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-162B	14.33094	0.01	50	134	1008.119	.01980	5.4	30	1.39	0.16	0.17	3.39	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-163B	21.26193	0.01	50	134	1171.12	.01921	5.2	30	1.34	0.14	0.15	4.27	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-164B	20.29349	0.01	50	134	1183.095	.01895	5.2	30	1.34	0.14	0.15	4.08	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-165B	9.131439	0.01	50	134	1031.723	.01497	5	30	1.29	0.13	0.14	1.65	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-166C	8.916691	0.01	50	134	516.8833	.02021	5.4	13	2.06	0.32	0.33	6.06	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-167C	11.28149	0.01	50	134	1219.874	.01689	5.2	30	1.34	0.14	0.15	2.27	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-168C	19.88473	0.01	50	134	1290.742	.01541	5.2	30	1.34	0.14	0.15	4	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-169C	13.55167	0.01	50	134	1191.118	.01518	5	30	1.29	0.13	0.14	2.45	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-172C	16.13601	0.01	50	134	431.4032	.02130	5.4	12	2.13	0.33	0.34	11.69	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-173C	31.23845	0.01	50	134	1204.46	.02320	5.4	30	1.39	0.16	0.17	7.38	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-174C	24.80502	0.01	50	134	1096.348	.01948	5.2	30	1.34	0.14	0.15	4.99	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-175C	22.25377	0.01	50	134	1184.323	.02112	5.2	30	1.34	0.14	0.15	4.47	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-176C	10.69175	0.01	50	134	1134.994	.01611	5	30	1.29	0.13	0.14	1.93	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-177D	11.28387	0.01	50	134	751.0913	.02682	5.4	18	1.76	0.27	0.28	5.56	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-178D	24.64661	0.01	50	134	1240.377	.02308	5.4	30	1.39	0.16	0.17	5.82	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-179D	21.73484	0.01	50	134	1094.51	.02002	5.2	30	1.34	0.14	0.15	4.37	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-180D	26.93663	0.01	50	134	1307.356	.01959	5	30	1.29	0.13	0.14	4.86	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-181D	21.68434	0.01	50	134	1222.048	.01335	5	30	1.29	0.13	0.14	3.92	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-184C	21.4973	0.01	50	134	785.3126	.00872	5	30	1.29	0.13	0.14	3.88	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-187B	26.32915	0.01	50	134	945.5837	.00932	5	30	1.29	0.13	0.14	4.76	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-188B	16.55833	0.01	50	134	1028.128	.01114	4.8	30	1.23	0.11	0.12	2.44	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-189B	12.15406	0.01	50	134	1193.582	.00944	4.8	30	1.23	0.11	0.12	1.79	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-190B	8.024283	0.01	50	134	1324.416	.00808	4.8	30	1.23	0.11	0.12	1.18	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-191C	12.34821	0.01	50	134	1244.821	.01518	5.2	30	1.34	0.14	0.15	2.48	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-192C	25.05609	0.01	50	134	1319.941	.01364	5	30	1.29	0.13	0.14	4.53	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-193C	21.81142	0.01	50	134	1013.645	.01300	5	30	1.29	0.13	0.14	3.94	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-194C	16.16052	0.01	50	134	1053.289	.01108	4.8	30	1.23	0.11	0.12	2.39	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-195C	8.225106	0.01	50	134	1155.546	.00825	4.8	30	1.23	0.11	0.12	1.21	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-198B	8.129738	0.01	50	134	843.9082	.01054	4.6	30	1.18	0.1	0.11	1.06	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-199C	9.304623	0.01	50	134	768.3526	.02460	5.2	24	1.48	0.19	0.2	2.75	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-200C	16.33232	0.01	50	134	992.4941	.02284	5.2	30	1.34	0.14	0.15	3.28	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-201C	14.6929	0.01	50	134	1104.258	.01677	5	30	1.29	0.13	0.14	2.65	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-202C	13.46073	0.01	50	134	1176.462	.01333	5	30	1.29	0.13	0.14	2.43	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-203C	16.60211	0.01	50	134	1304.276	.01164	4.8	30	1.23	0.11	0.12	2.45	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-204C	18.23114	0.01	50	134	1076.079	.01273	4.8	30	1.23	0.11	0.12	2.69	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-205C	17.81119	0.01	50	134	1016.733	.00909	4.8	30	1.23	0.11	0.12	2.63	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-206C	14.56316	0.01	50	134	1272.642	.00881	4.8	30	1.23	0.11	0.12	2.15	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-207C	11.4037	0.01	50	134	981.314	.00747	4.6	30	1.18	0.1	0.11	1.48	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-208C	11.22992	0.01	50	134	916.7914	.01030	4.6	30	1.18	0.1	0.11	1.46	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-211B	19.91847	0.01	50	134	1098.022	.00735	4.6	30	1.18	0.1	0.11	2.59	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135

AREA 2 - TIME OF CONCENTRATION (TC) CALCULATIONS

ALPINE	2-212B	22.10804	0.01	50	134	1083.754	.00864	4.6	30	1.18	0.1	0.11	2.87	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-213B	18.8	0.01	50	134	995.1675	.00756	4.6	30	1.18	0.1	0.11	2.44	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-214A	15.2	0.01	50	134	892.8424	.00543	4.4	30	1.13	0.1	0.11	1.89	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-215C	3.258645	0.01	50	134	829.7643	.01087	4.8	30	1.23	0.11	0.12	0.48	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-216C	5.18078	0.01	50	134	1144.676	.00747	4.6	30	1.18	0.1	0.11	0.67	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-217C	5.722555	0.01	50	134	1115.072	.00860	4.6	30	1.18	0.1	0.11	0.74	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-218C	7.649824	0.01	50	134	987.7639	.00779	4.6	30	1.18	0.1	0.11	0.99	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-219C	5.842557	0.01	50	134	954.16	.00452	4.4	30	1.13	0.1	0.11	0.73	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-222B	6.7	0.01	50	134	625	.00600	4.4	30	1.13	0.1	0.11	0.83	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-225A	18.8	0.01	50	134	799	.00880	4.4	30	1.13	0.1	0.11	2.34	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-226A	17.2	0.01	50	134	822	.00780	4.4	30	1.13	0.1	0.11	2.14	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-227A	10.2	0.01	50	134	1130	.00360	4.4	30	1.13	0.1	0.11	1.27	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-228A	9.3	0.01	50	134	1122	.00430	4.4	30	1.13	0.1	0.11	1.16	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	2-229A	12	0.01	50	134	1139	.00970	4.4	30	1.13	0.1	0.11	1.49	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135

AREA 3 - TIME OF CONCENTRATION (TC) CALCULATIONS

Project	Subarea	Area (acres	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.	Tc-calculat	Intensity (ir	Cu	Cd	Flowrate (c	Tc Equation
ALPINE	3-1A	12.30097	0.01	50	120	541.4212	.15141	7.6	5	4.53	0.74	0.74	41.24	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-2A	30.71545	0.01	50	134	1689.026	.13251	7.6	13	2.89	0.44	0.44	39.06	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-3A	35.27515	0.01	50	134	1701.974	.11474	7.2	15	2.56	0.4	0.41	37.02	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-4B	9.008608	0.01	50	134	884.237	.15566	7.6	8	3.64	0.51	0.51	16.72	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-5B	25.22973	0.01	50	134	1508.983	.21074	7.4	11	3.05	0.46	0.46	35.4	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-8A	41.77889	0.01	50	134	1113.728	.15099	7.2	10	3.1	0.46	0.46	59.58	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-9A	27.0776	0.01	50	124	1090.445	.09619	7.2	13	2.74	0.33	0.34	25.23	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-10B	6.523329	0.01	50	134	429.5815	.42604	7.2	5	4.3	0.56	0.56	15.71	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-11B	15.92636	0.01	50	134	1111.744	.21130	7.2	9	3.26	0.48	0.48	24.92	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-14A	21.18722	0.01	50	124	885.3054	.05754	7	13	2.67	0.32	0.33	18.67	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-15A	11.49965	0.01	50	124	872.1828	.05423	7	13	2.67	0.32	0.33	10.13	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-16B	11.26227	0.01	50	124	811.1607	.16661	7	9	3.17	0.38	0.39	13.92	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-17B	15.12417	0.01	50	124	1460.505	.13071	7	17	2.35	0.27	0.28	9.95	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-20A	4.135957	0.01	50	124	569.1024	.07099	6.8	9	3.08	0.37	0.38	4.84	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-21B	2.820012	0.01	50	124	346.4082	.23394	7	5	4.18	0.49	0.49	5.78	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-22B	7.224389	0.01	50	124	1221.46	.12821	7	14	2.57	0.3	0.31	5.76	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-25B	7.987678	0.01	50	124	702.9374	.08349	6.8	10	2.93	0.35	0.36	8.43	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-28A	9.757622	0.01	50	124	580.9607	.06721	6.8	9	3.08	0.37	0.38	11.42	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-29A	11.60536	0.01	50	124	1067.925	.06672	6.8	16	2.35	0.27	0.28	7.64	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-30A	12.75299	0.01	50	124	908.4814	.05324	6.6	15	2.35	0.27	0.28	8.39	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-31A	15.0468	0.01	50	124	807.5389	.04483	6.4	16	2.21	0.25	0.26	8.65	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-32B	5.357445	0.01	50	124	437.7165	.08768	7	7	3.57	0.43	0.43	8.22	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-33B	7.14713	0.01	50	124	986.2006	.03490	6.8	18	2.22	0.25	0.26	4.13	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-34B	9.195781	0.01	50	124	794.1307	.04285	6.8	13	2.59	0.31	0.32	7.62	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-35B	10.54229	0.01	50	124	738.7738	.04034	6.8	12	2.69	0.32	0.33	9.36	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-36B	21.24423	0.01	50	124	891.6025	.03824	6.6	17	2.22	0.25	0.26	12.26	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-37B	28.02679	0.01	50	124	883.7105	.04316	6.4	18	2.09	0.23	0.24	14.06	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-38B	35.92901	0.01	50	124	894.0022	.04287	6.4	18	2.09	0.23	0.24	18.02	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-39B	44.00036	0.01	50	124	933.0808	.03160	6.2	24	1.77	0.17	0.18	14.02	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-41C	10.42809	0.01	50	134	855.3556	.20664	7.2	8	3.44	0.5	0.5	17.94	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-42C	10.85716	0.01	50	124	767.0422	.15958	7.2	9	3.26	0.39	0.4	14.16	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-43C	12.7423	0.01	50	124	895.7339	.15339	7	10	3.02	0.37	0.38	14.62	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-44D	8.934653	0.01	50	124	1082.617	.21389	7.2	11	2.97	0.36	0.37	9.82	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-47C	1.956971	0.01	50	124	585.5592	.08664	7	8	3.35	0.4	0.41	2.69	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-48D	7.44365	0.01	50	124	490.6208	.17498	7.2	6	3.94	0.47	0.47	13.78	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-49D	21.26478	0.01	50	124	1488.414	.13975	7	17	2.35	0.27	0.28	13.99	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-52D	4.192138	0.01	50	124	204.8213	.15151	7	5	4.18	0.49	0.49	8.59	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-53D	7.835293	0.01	50	124	597.7704	.09980	7	8	3.35	0.4	0.41	10.76	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-56C	36.78855	0.01	50	124	1926.156	.04616	7	30	1.8	0.18	0.19	12.58	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-57D	4.382293	0.01	50	124	509.0747	.12065	7	7	3.57	0.43	0.43	6.73	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-58D	7.828638	0.01	50	124	977.8753	.06881	6.8	14	2.5	0.29	0.3	5.87	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-61C	8.399461	0.01	50	124	470.1305	.07090	6.8	8	3.25	0.39	0.4	10.92	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-62D	3.825147	0.01	50	124	484.6013	.09748	7	7	3.57	0.43	0.43	5.87	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-63D	7.30652	0.01	50	124	744.2399	.04248	6.8	12	2.69	0.32	0.33	6.49	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-64D	7.561022	0.01	50	124	870.6595	.04806	6.8	14	2.5	0.29	0.3	5.67	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-67C	22.2435	0.01	50	124	692.5071	.05228	6.8	12	2.69	0.32	0.33	19.75	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-68C	26.74632	0.01	50	124	826.7501	.02618	6.6	17	2.22	0.25	0.26	15.44	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-69D	8.175049	0.01	50	124	547.1656	.18618	7	7	3.57	0.43	0.43	12.55	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-70D	17.81681	0.01	50	124	779.9594	.10566	7	10	3.02	0.37	0.38	20.45	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-71D	19.73177	0.01	50	124	878.3103	.09542	6.8	12	2.69	0.32	0.33	17.52	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-72D	23.06577	0.01	50	124	1089.284	.04589	6.8	18	2.22	0.25	0.26	13.31	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-75C	41.75326	0.01	50	124	821.792	.03894	6.6	15	2.35	0.27	0.28	27.47	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135

AREA 3 - TIME OF CONCENTRATION (TC) CALCULATIONS

ALPINE	3-76C	40.5042	0.01	50	124	822.6117	.03639	6.4	17	2.15	0.24	0.25	21.77	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-77C	46.94008	0.01	50	124	987.3185	.03718	6.4	22	1.9	0.19	0.2	17.84	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-84B	10.85375	0.01	50	134	694.8261	.22258	7	7	3.57	0.51	0.51	19.76	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-85B	31.46617	0.01	50	124	1282.323	.18903	7	13	2.67	0.32	0.33	27.72	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-86B	33.82976	0.01	50	124	1378.619	.07518	6.8	21	2.07	0.23	0.24	16.81	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-87B	18.15385	0.01	50	124	445.761	.07018	6.8	7	3.46	0.41	0.41	25.75	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-88B	10.18574	0.01	50	124	622.4682	.05015	6.8	10	2.93	0.35	0.36	10.74	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-89C	8.842246	0.01	50	124	447.4772	.12846	6.8	6	3.72	0.44	0.44	14.47	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-90C	11.43327	0.01	50	124	1104.16	.06474	6.8	16	2.35	0.27	0.28	7.52	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-93B	12.04703	0.01	50	124	636.0639	.04617	6.6	12	2.61	0.31	0.32	10.06	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-94B	8.3299	0.01	50	124	697.5198	.03287	6.6	13	2.51	0.3	0.31	6.48	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-97B	13.45858	0.01	50	124	1005.139	.11865	7	12	2.77	0.33	0.34	12.68	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-98B	10.26846	0.01	50	124	846.6546	.17020	6.8	10	2.93	0.35	0.36	10.83	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-99C	10.65272	0.01	50	124	973.0069	.16410	6.8	12	2.69	0.32	0.33	9.46	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-102B	18.46121	0.01	50	124	1192.313	.10191	6.8	16	2.35	0.27	0.28	12.15	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-103C	5.915466	0.01	50	124	663.4268	.14786	6.8	9	3.08	0.37	0.38	6.92	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-104C	9.419602	0.01	50	124	1306.226	.14308	6.8	16	2.35	0.27	0.28	6.2	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-107B	8.083553	0.01	50	124	726.6986	.04132	6.6	13	2.51	0.3	0.31	6.29	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-108C	9.122108	0.01	50	124	852.2424	.18345	6.6	11	2.72	0.33	0.34	8.44	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-109C	17.12575	0.01	50	124	1097.85	.04577	6.6	21	2.01	0.22	0.23	7.92	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-112B	27.9911	0.01	50	124	775.3258	.05071	6.4	14	2.35	0.27	0.28	18.42	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-114C	13.25573	0.01	50	124	1111.542	.10691	6.8	14	2.5	0.29	0.3	9.94	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-115C	11.79285	0.01	50	124	1067.125	.04766	6.6	20	2.05	0.22	0.23	5.56	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-121A	44.49695	0.01	50	124	1175.244	.02650	6.4	30	1.64	0.15	0.16	11.68	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-122A	42.7889	0.01	50	124	1241.192	.02035	6.2	30	1.59	0.14	0.15	10.21	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-123A	32.04538	0.01	50	124	1373.17	.02016	6	30	1.54	0.13	0.14	6.91	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-124A	18.92712	0.01	50	134	1306.535	.01659	6	30	1.54	0.2	0.21	6.12	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-125B	28.16563	0.01	50	124	466.3152	.02054	6.2	12	2.45	0.29	0.3	20.7	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-126B	32.822	0.01	50	124	1355.363	.02192	6	30	1.54	0.13	0.14	7.08	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-127B	24.52044	0.01	50	124	1234.311	.01824	6	30	1.54	0.13	0.14	5.29	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-128B	14.47974	0.01	50	134	1327.601	.01370	5.8	30	1.49	0.19	0.2	4.31	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-131A	15.93791	0.01	50	134	1093.684	.01054	5.8	30	1.49	0.19	0.2	4.75	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-132B	11.43667	0.01	50	120	735.4592	.17363	7.8	5	4.65	0.74	0.74	39.35	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-133B	12.37191	0.01	50	120	834.2192	.16660	7.8	6	4.27	0.72	0.72	38.04	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-134C	24.02048	0.01	50	120	789.7175	.26598	7.8	5	4.65	0.74	0.74	82.65	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-137B	6.345858	0.01	50	120	731.8034	.14393	7.6	5	4.53	0.74	0.74	21.27	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-138C	5.447899	0.01	50	120	369.9113	.25467	7.6	5	4.53	0.74	0.74	18.26	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-139C	20.73575	0.01	50	120	959.7414	.22406	7.6	6	4.16	0.72	0.72	62.11	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-142B	9.353978	0.01	50	120	785.5419	.15274	7.6	6	4.16	0.72	0.72	28.02	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-143C	7.169349	0.01	50	120	471.0503	.34390	7.6	5	4.53	0.74	0.74	24.03	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-144C	9.93296	0.01	50	120	955.7839	.14850	7.6	7	3.87	0.7	0.7	26.91	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-147C	14.40079	0.01	50	134	747.821	.15664	7.6	7	3.87	0.53	0.53	29.54	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-148C	21.69105	0.01	50	120	1601.053	.20024	7.4	9	3.35	0.67	0.67	48.69	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-151B	31.6149	0.01	50	120	1197.057	.05390	7.4	10	3.19	0.66	0.66	66.56	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-152C	2.835918	0.01	50	120	393.5826	.42203	7.8	5	4.65	0.74	0.74	9.76	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-153C	4.819203	0.01	50	120	600.7849	.34336	7.6	5	4.53	0.74	0.74	16.15	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-154C	3.058287	0.01	50	120	265.4322	.25332	7.6	5	4.53	0.74	0.74	10.25	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-155D	3.165872	0.01	50	120	423.1688	.47522	7.8	5	4.65	0.74	0.74	10.89	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-156D	5.594075	0.01	50	120	835.842	.28165	7.6	5	4.53	0.74	0.74	18.75	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-159C	17.86339	0.01	50	120	1510.339	.08547	7.4	10	3.19	0.66	0.66	37.61	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-162C	8.907582	0.01	50	120	313.6964	.25806	7.8	5	4.65	0.74	0.74	30.65	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-163C	13.47769	0.01	50	120	562.4436	.27801	7.8	5	4.65	0.74	0.74	46.38	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-164D	12.00032	0.01	50	120	979.3513	.34428	7.8	6	4.27	0.72	0.72	36.89	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135

AREA 3 - TIME OF CONCENTRATION (TC) CALCULATIONS

ALPINE	3-167C	19.32811	0.01	50	120	498.1369	.23254	7.6	5	4.53	0.74	0.74	64.79	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-168C	17.22292	0.01	50	120	986.1517	.08379	7.6	7	3.87	0.7	0.7	46.66	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-169D	14.27555	0.01	50	120	643.4578	.22906	7.6	5	4.53	0.74	0.74	47.85	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-170D	13.9496	0.01	50	120	872.7157	.34344	7.6	5	4.53	0.74	0.74	46.76	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-171E	20.08979	0.01	50	120	970.5552	.26201	7.4	6	4.05	0.71	0.71	57.77	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-174D	16.67952	0.01	50	120	777.3033	.09675	7.4	6	4.05	0.71	0.71	47.96	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-177C	20.94796	0.01	50	120	961.9304	.05124	7.4	8	3.54	0.69	0.69	51.17	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-180B	44.14594	0.01	50	120	1737.43	.04583	7.2	13	2.74	0.62	0.62	75	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-181C	12.36783	0.01	50	120	757.8828	.14926	7.4	6	4.05	0.71	0.71	35.56	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-182C	29.5368	0.01	50	120	1405.968	.14167	7.2	9	3.26	0.66	0.66	63.55	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-183C	4.770582	0.01	50	120	580.9954	.13575	7	5	4.18	0.72	0.72	14.36	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-184D	6.271511	0.01	50	134	534.1264	.21299	7.2	5	4.3	0.56	0.56	15.1	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-185D	10.49767	0.01	50	120	868.9781	.15477	7	7	3.57	0.69	0.69	25.86	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-188C	11.08413	0.01	50	120	695.0992	.12975	7	6	3.83	0.7	0.7	29.72	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-191B	29.47421	0.01	50	120	1283.817	.03833	7	11	2.88	0.63	0.63	53.48	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-192B	24.34161	0.01	50	120	820.3698	.04418	6.8	8	3.25	0.66	0.66	52.21	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-193B	19.66922	0.01	50	134	738.8392	.06758	6.8	9	3.08	0.46	0.46	27.87	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-194B	33.63839	0.01	50	134	1446.491	.09519	6.6	15	2.35	0.37	0.38	30.04	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-195B	16.55547	0.01	50	134	426.8074	.03615	6.4	8	3.06	0.46	0.46	23.3	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-196B	20.71205	0.01	50	134	1191.494	.03815	6.4	17	2.15	0.33	0.34	15.14	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-197B	24.10172	0.01	50	134	1124.416	.04581	6.4	15	2.28	0.36	0.37	20.33	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-198C	11.371	0.01	50	134	757.9608	.22878	7.4	7	3.77	0.52	0.52	22.29	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-199C	32.17182	0.01	50	120	1279.317	.11163	7.2	9	3.26	0.66	0.66	69.22	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-200D	12.2307	0.01	50	120	879.9893	.09513	7.2	7	3.67	0.69	0.69	30.97	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-203C	36.38419	0.01	50	134	1844.839	.07014	7	18	2.29	0.36	0.37	30.83	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-204D	13.11138	0.01	50	134	697.2646	.12502	7	8	3.35	0.49	0.49	21.52	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-205D	6.590951	0.01	50	134	883.9565	.13023	7	9	3.17	0.47	0.47	9.82	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-208C	39.86762	0.01	50	134	1294.719	.12816	6.8	12	2.69	0.42	0.42	45.04	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-209D	10.25587	0.01	50	134	809.3366	.11707	7	9	3.17	0.47	0.47	15.28	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-210D	5.157566	0.01	50	134	575.4689	.15612	7	6	3.83	0.53	0.53	10.47	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-211E	4.543695	0.01	50	134	454.3521	.08222	7	6	3.83	0.53	0.53	9.22	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-212E	3.000222	0.01	50	134	675.5192	.14919	7	7	3.57	0.51	0.51	5.46	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-215D	5.642046	0.01	50	134	657.8344	.17232	6.8	7	3.46	0.5	0.5	9.76	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-218C	21.62886	0.01	50	134	1363.584	.08413	6.6	15	2.35	0.37	0.38	19.31	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-219D	6.378427	0.01	50	134	797.1575	.11968	6.8	9	3.08	0.46	0.46	9.04	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-220D	14.08436	0.01	50	134	1229.671	.16411	6.6	12	2.61	0.41	0.41	15.07	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-223C	35.33677	0.01	50	134	1771.603	.06488	6.6	21	2.01	0.31	0.32	22.73	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-226B	11.46016	0.01	50	134	516.4605	.01723	6.4	11	2.64	0.41	0.41	12.4	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-227B	23.18098	0.01	50	134	851.5524	.04396	6.4	12	2.53	0.4	0.41	24.05	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-228C	7.787913	0.01	50	134	876.4035	.05328	6.4	12	2.53	0.4	0.41	8.08	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-229C	23.64661	0.01	50	134	1227.579	.05537	6.4	16	2.21	0.34	0.35	18.29	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-230C	57.96896	0.01	50	134	1153.507	.05086	6.2	17	2.08	0.32	0.33	39.79	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-234C	17.40849	0.01	50	134	450.7854	.22146	7.2	5	4.3	0.56	0.56	41.92	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-235C	37.15186	0.01	50	134	1305.466	.13026	7	12	2.77	0.43	0.43	44.25	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-236C	11.11411	0.01	50	124	727.6581	.12373	7	9	3.17	0.38	0.39	13.74	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-237D	13.39968	0.01	50	134	643.6953	.25345	7	6	3.83	0.53	0.53	27.2	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-238D	20.90491	0.01	50	134	1522.082	.16398	7	13	2.67	0.42	0.42	23.44	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-241C	27.96683	0.01	50	124	920.4702	.08614	6.8	12	2.69	0.32	0.33	24.83	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-242C	11.08431	0.01	50	124	990.721	.06669	6.8	15	2.42	0.28	0.29	7.78	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-243D	6.93207	0.01	50	134	975.7036	.21128	7	9	3.17	0.47	0.47	10.33	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-244D	16.54722	0.01	50	124	1268.365	.11406	6.8	16	2.35	0.27	0.28	10.89	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-247C	2.278509	0.01	50	124	277.5582	.03741	6.6	6	3.61	0.43	0.43	3.54	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-248D	6.349759	0.01	50	134	510.6094	.18583	6.8	6	3.72	0.52	0.52	12.28	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135

AREA 3 - TIME OF CONCENTRATION (TC) CALCULATIONS

ALPINE	3-249D	12.6907	0.01	50	124	937.0939	.06685	6.6	15	2.35	0.27	0.28	8.35	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-252C	24.01868	0.01	50	124	1074.495	.05993	6.6	18	2.16	0.24	0.25	12.97	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-253C	23.13909	0.01	50	124	1028.915	.05778	6.4	19	2.04	0.22	0.23	10.86	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-257B	13.28467	0.01	50	124	824.0793	.02933	6.2	21	1.88	0.19	0.2	5	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-258B	16.75867	0.01	50	124	1135.381	.02646	6.2	30	1.59	0.14	0.15	4	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-259C	24.07027	0.01	50	124	919.9525	.02640	6.2	26	1.7	0.16	0.17	6.96	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-260C	32.28422	0.01	50	124	1487.884	.02019	6.2	30	1.59	0.14	0.15	7.7	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-263B	32.40366	0.01	50	134	940.6894	.02198	6.2	17	2.08	0.32	0.33	22.24	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-264B	28.51094	0.01	50	134	1030.438	.01678	6	21	1.82	0.28	0.29	15.05	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-265B	22.09143	0.01	50	134	1135.225	.01228	5.8	30	1.49	0.19	0.2	6.58	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-268A	17.93691	0.01	50	134	780.2933	.01503	5.8	18	1.9	0.29	0.3	10.22	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-269A	11.90346	0.01	50	134	802.1738	.01032	5.6	25	1.57	0.21	0.22	4.11	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-270A	9.746099	0.01	50	134	824.6697	.00925	5.6	28	1.49	0.19	0.2	2.9	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-271B	10.11095	0.01	50	134	859.1819	.01874	5.8	19	1.85	0.28	0.29	5.42	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-272B	9.722247	0.01	50	134	902.965	.01251	5.6	28	1.49	0.19	0.2	2.9	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-273B	6.516822	0.01	50	134	906.3449	.01128	5.6	30	1.44	0.17	0.18	1.69	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-276A	17.77487	0.01	50	134	945.974	.00816	5.4	30	1.39	0.16	0.17	4.2	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-277B	18.91756	0.01	50	134	511.4308	.02970	6.2	10	2.67	0.42	0.42	21.21	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-278B	24.58982	0.01	50	134	1102.31	.02872	6.2	19	1.98	0.3	0.31	15.09	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-279B	17.54496	0.01	50	134	1029.297	.01909	6	21	1.82	0.28	0.29	9.26	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-280B	15.85231	0.01	50	134	876.9362	.01892	5.8	19	1.85	0.28	0.29	8.5	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-281B	10.19847	0.01	50	134	879.3891	.01649	5.8	21	1.76	0.27	0.28	5.03	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-282C	12.89138	0.01	50	134	575.899	.04679	6.2	9	2.81	0.43	0.43	15.58	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-283C	32.87627	0.01	50	134	990.8198	.03481	6	17	2.01	0.31	0.32	21.15	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-284C	47.27229	0.01	50	134	1209.583	.02430	6	23	1.75	0.26	0.27	22.34	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-285C	33.65527	0.01	50	134	1332.07	.01584	5.8	30	1.49	0.19	0.2	10.03	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-288B	29.90488	0.01	50	134	1107.491	.01108	5.6	30	1.44	0.17	0.18	7.75	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-289B	13.52293	0.01	50	134	1239.523	.01137	5.4	30	1.39	0.16	0.17	3.2	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-292A	12.51643	0.01	50	124	574.2215	.00764	5.4	30	1.39	0.1	0.11	1.91	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-293B	13.73184	0.01	50	134	509.2267	.01888	5.6	12	2.21	0.34	0.35	10.62	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-294B	17.89512	0.01	50	134	1306.283	.01031	5.4	30	1.39	0.16	0.17	4.23	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-297A	21.52841	0.01	50	124	953.3513	.00922	5.2	30	1.34	0.1	0.11	3.17	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-298A	20.86173	0.01	50	124	1287.468	.00669	5.2	30	1.34	0.1	0.11	3.08	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-299B	19.93341	0.01	50	134	217.9881	.05244	6	5	3.58	0.51	0.51	36.39	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-300B	20.80551	0.01	50	134	910.7849	.02399	6	17	2.01	0.31	0.32	13.38	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-301B	15.19739	0.01	50	134	996.1151	.02184	5.8	21	1.76	0.27	0.28	7.49	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-302B	23.7849	0.01	50	134	1063.45	.02137	5.8	23	1.69	0.26	0.27	10.85	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-303B	33.53329	0.01	50	134	1127.601	.02022	5.6	30	1.44	0.17	0.18	8.69	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-304B	29.78666	0.01	50	134	1262.976	.01375	5.4	30	1.39	0.16	0.17	7.04	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-305B	16.37658	0.01	50	124	1074.027	.01102	5.4	30	1.39	0.1	0.11	2.5	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-306B	9.839849	0.01	50	124	1388.151	.01052	5.2	30	1.34	0.1	0.11	1.45	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-309B	14.15247	0.01	50	134	997.4186	.19466	7	9	3.17	0.47	0.47	21.09	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-310B	19.4915	0.01	50	134	1063.76	.06843	6.8	12	2.69	0.42	0.42	22.02	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-311B	31.72163	0.01	50	134	1521.845	.08908	6.6	16	2.28	0.36	0.37	26.76	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-312B	20.46733	0.01	50	134	902.2212	.17495	6.6	9	2.99	0.45	0.45	27.54	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-313B	19.24419	0.01	50	134	1385.327	.06604	6.4	17	2.15	0.33	0.34	14.07	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-314C	6.880363	0.01	50	134	687.8188	.20218	6.6	7	3.36	0.49	0.49	11.33	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-315C	13.64917	0.01	50	134	1422.02	.13507	6.4	14	2.35	0.37	0.38	12.19	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-318B	15.88675	0.01	50	134	1259.134	.03129	6.4	20	1.99	0.31	0.32	10.12	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-319C	14.40322	0.01	50	134	790.3624	.18095	6.4	9	2.9	0.44	0.44	18.38	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-320C	27.05767	0.01	50	134	1072.137	.03479	6.4	16	2.21	0.34	0.35	20.93	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-323B	8.500204	0.01	50	134	604.9025	.02215	6.2	12	2.45	0.39	0.4	8.33	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-324C	11.03783	0.01	50	134	935.6806	.05764	6.4	12	2.53	0.4	0.41	11.45	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135

AREA 3 - TIME OF CONCENTRATION (TC) CALCULATIONS

ALPINE	3-325C	9.076904	0.01	50	134	725.6427	.04649	6.2	11	2.55	0.4	0.41	9.49	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-328B	14.42439	0.01	50	134	456.7779	.02623	6.2	9	2.81	0.43	0.43	17.43	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-329C	8.133369	0.01	50	134	469.0223	.06235	6.4	7	3.26	0.48	0.48	12.73	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-330C	25.76621	0.01	50	134	1149.64	.04234	6.2	18	2.03	0.31	0.32	16.74	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-334C	13.49126	0.01	50	134	908.8525	.09636	6.8	10	2.93	0.45	0.45	17.79	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-335C	17.25517	0.01	50	134	1344.628	.12900	6.6	13	2.51	0.4	0.41	17.76	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-336C	29.59457	0.01	50	134	2102.688	.10196	6.6	21	2.01	0.31	0.32	19.04	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-337D	9.012623	0.01	50	134	973.89	.12440	6.8	10	2.93	0.45	0.45	11.88	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-338D	11.734	0.01	50	134	924.3165	.13738	6.6	10	2.84	0.44	0.44	14.66	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-339D	25.45427	0.01	50	134	1753.498	.12448	6.6	17	2.22	0.35	0.36	20.34	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-342C	39.49636	0.01	50	134	1378.182	.03394	6.4	21	1.95	0.3	0.31	23.88	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-343C	38.23345	0.01	50	134	1301.137	.03706	6.2	20	1.93	0.3	0.31	22.88	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-347B	25.98336	0.01	50	134	992.7473	.02585	6	19	1.91	0.29	0.3	14.89	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-348B	13.37483	0.01	50	134	973.7019	.01629	6	21	1.82	0.28	0.29	7.06	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-349C	15.81912	0.01	50	134	894.5317	.02570	6	17	2.01	0.31	0.32	10.17	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-350C	9.50797	0.01	50	134	1119.437	.01846	6	23	1.75	0.26	0.27	4.49	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-353B	17.79004	0.01	50	134	1227.291	.02182	5.8	30	1.49	0.19	0.2	5.3	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-354B	17.77463	0.01	50	134	1267.999	.01899	5.6	30	1.44	0.17	0.18	4.61	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-355B	14.71301	0.01	50	134	1369.997	.01517	5.6	30	1.44	0.17	0.18	3.81	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-356C	12.22671	0.01	50	134	996.7679	.02874	6	18	1.96	0.3	0.31	7.43	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-357C	24.38675	0.01	50	134	940.8346	.02776	5.8	19	1.85	0.28	0.29	13.08	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-358C	36.64178	0.01	50	134	1274.222	.02528	5.8	30	1.49	0.19	0.2	10.92	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-359C	20.59692	0.01	50	134	1344.784	.01491	5.6	30	1.44	0.17	0.18	5.34	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-362B	23.73495	0.01	50	134	1387.279	.01266	5.4	30	1.39	0.16	0.17	5.61	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-363C	16.0248	0.01	50	134	706.292	.15983	7.8	6	4.27	0.56	0.56	38.32	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-364C	24.53805	0.01	50	134	830.1861	.10613	7.6	8	3.64	0.51	0.51	45.55	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-365C	28.02717	0.01	50	134	990.8754	.11641	7.6	9	3.44	0.5	0.5	48.21	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-366C	18.66685	0.01	50	120	793.3226	.11016	7.4	6	4.05	0.71	0.71	53.68	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-367D	14.87131	0.01	50	134	800.8514	.23217	7.4	7	3.77	0.52	0.52	29.15	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-368D	27.81632	0.01	50	134	1130.565	.13862	7.4	10	3.19	0.47	0.47	41.71	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-371C	26.47511	0.01	50	120	995.8775	.08100	7.2	8	3.44	0.68	0.68	61.93	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-372C	23.59405	0.01	50	120	587.0889	.03931	7.2	6	3.94	0.71	0.71	66	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-373D	9.23685	0.01	50	120	995.8235	.23413	7.2	6	3.94	0.71	0.71	25.84	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-376C	31.38471	0.01	50	120	1256.725	.05884	7	10	3.02	0.65	0.65	61.61	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-377C	18.57131	0.01	50	134	858.0848	.05810	7	11	2.88	0.44	0.44	23.53	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-378D	17.50851	0.01	50	134	793.6919	.17368	7.2	7	3.67	0.52	0.52	33.41	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-379D	25.72624	0.01	50	134	1184.38	.13713	7	11	2.88	0.44	0.44	32.6	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-382C	33.59663	0.01	50	134	1110.098	.05774	7	12	2.77	0.43	0.43	40.02	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-383C	44.67591	0.01	50	134	1444.307	.07679	6.8	15	2.42	0.38	0.39	42.17	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-384D	14.04659	0.01	50	134	1123.413	.25901	6.8	10	2.93	0.45	0.45	18.52	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-387C	30.89165	0.01	50	134	1502.034	.05408	6.8	17	2.28	0.36	0.37	26.06	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-388D	7.701044	0.01	50	134	476.5569	.25874	6.8	5	4.06	0.55	0.55	17.2	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-389D	18.01885	0.01	50	134	1097.823	.17341	6.8	11	2.8	0.43	0.43	21.69	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-392C	15.78104	0.01	50	134	933.0684	.03418	6.6	13	2.51	0.4	0.41	16.24	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-393C	15.43861	0.01	50	134	1086.564	.02409	6.4	18	2.09	0.32	0.33	10.65	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-394C	13.89355	0.01	50	134	788.0473	.02597	6.2	14	2.28	0.36	0.37	11.72	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-395C	13.35579	0.01	50	134	1027.16	.02533	6.2	18	2.03	0.31	0.32	8.68	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-396D	14.54804	0.01	50	134	821.4692	.17430	6.6	9	2.99	0.45	0.45	19.57	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-397D	13.75474	0.01	50	134	821.9096	.05834	6.4	11	2.64	0.41	0.41	14.89	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-398D	7.001384	0.01	50	134	1260.673	.02826	6.2	21	1.88	0.29	0.3	3.95	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-401D	4.135982	0.01	50	134	518.5776	.19214	6.4	6	3.5	0.5	0.5	7.24	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-402D	14.72582	0.01	50	134	1282.976	.04474	6.2	19	1.98	0.3	0.31	9.04	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-405C	12.40661	0.01	50	134	617.4451	.02937	6.2	11	2.55	0.4	0.41	12.97	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135

AREA 3 - TIME OF CONCENTRATION (TC) CALCULATIONS

ALPINE	3-406C	6.199796	0.01	50	134	833.9647	.02318	6	16	2.07	0.32	0.33	4.24	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-407C	9.467977	0.01	50	134	230.2971	.03829	6	5	3.58	0.51	0.51	17.29	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-408C	17.72266	0.01	50	134	671.5772	.02723	6	12	2.37	0.37	0.38	15.96	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-409D	7.442976	0.01	50	134	442.371	.30093	6.6	5	3.94	0.54	0.54	15.84	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-410D	7.254205	0.01	50	134	645.9237	.12404	6.6	8	3.16	0.47	0.47	10.77	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-411E	8.422981	0.01	50	134	686.2277	.19352	6.6	7	3.36	0.49	0.49	13.87	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-414D	14.64132	0.01	50	134	741.8125	.07094	6.6	10	2.84	0.44	0.44	18.3	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-415D	7.671265	0.01	50	134	652.8698	.05924	6.4	9	2.9	0.44	0.44	9.79	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-416E	5.06477	0.01	50	134	420.496	.09460	6.6	6	3.61	0.51	0.51	9.32	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-417E	11.75004	0.01	50	134	1063.739	.05809	6.4	14	2.35	0.37	0.38	10.49	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-420D	14.897	0.01	50	134	696.9254	.03696	6.2	12	2.45	0.39	0.4	14.6	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-421D	7.132888	0.01	50	134	675.7177	.03076	6.2	12	2.45	0.39	0.4	6.99	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-422D	2.363217	0.01	50	134	1159.111	.02628	6	21	1.82	0.28	0.29	1.25	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-425D	13.15065	0.01	50	134	724.0453	.26664	7.2	6	3.94	0.54	0.54	27.98	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-426D	20.27471	0.01	50	134	1264.556	.14746	7.2	11	2.97	0.45	0.45	27.1	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-427E	7.024166	0.01	50	134	588.6533	.29640	7.2	5	4.3	0.56	0.56	16.91	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-428E	7.093718	0.01	50	134	1138.651	.17017	7.2	10	3.1	0.46	0.46	10.12	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-431E	14.96231	0.01	50	134	1399.303	.18787	7.2	11	2.97	0.45	0.45	20	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-434E	7.62556	0.01	50	134	761.9464	.15728	7	8	3.35	0.49	0.49	12.52	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-437D	17.09396	0.01	50	134	1178.904	.11395	7	12	2.77	0.43	0.43	20.36	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-438E	9.345293	0.01	50	134	910.3181	.25870	7	8	3.35	0.49	0.49	15.34	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-441D	18.98243	0.01	50	134	931.2613	.12445	6.8	10	2.93	0.45	0.45	25.03	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-442E	7.446653	0.01	50	134	380.1469	.23158	7	5	4.18	0.56	0.56	17.43	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-443E	25.80154	0.01	50	134	1056.73	.15041	7	10	3.02	0.46	0.46	35.84	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-444E	27.22272	0.01	50	134	1517.765	.11247	6.8	14	2.5	0.39	0.4	27.22	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-447D	38.33296	0.01	50	134	1435.549	.05735	6.6	17	2.22	0.35	0.36	30.64	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-448E	10.89886	0.01	50	134	1086.161	.19712	6.6	11	2.72	0.42	0.42	12.45	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-451D	18.04001	0.01	50	134	949.1851	.03937	6.6	13	2.51	0.4	0.41	18.56	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-452D	10.86632	0.01	50	134	999.4493	.04261	6.4	14	2.35	0.37	0.38	9.7	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-453D	18.71131	0.01	50	134	934.563	.05235	6.2	13	2.36	0.37	0.38	16.78	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-454D	20.73042	0.01	50	134	682.2353	.03769	6.2	11	2.55	0.4	0.41	21.67	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-455D	19.46553	0.01	50	134	942.5276	.02963	6	17	2.01	0.31	0.32	12.52	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-458C	12.6747	0.01	50	134	840.5332	.01261	5.8	21	1.76	0.27	0.28	6.25	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-459C	9.370258	0.01	50	134	831.9825	.02404	5.8	17	1.95	0.3	0.31	5.66	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-460D	5.587811	0.01	50	134	525.822	.02162	6	11	2.47	0.39	0.4	5.52	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-461D	8.580207	0.01	50	134	1041.97	.01822	5.8	24	1.66	0.24	0.25	3.56	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-464C	10.47526	0.01	50	134	780.6177	.02284	5.8	16	2	0.31	0.32	6.7	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-465C	9.76807	0.01	50	134	1159.487	.01739	5.6	30	1.44	0.17	0.18	2.53	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-466D	12.33639	0.01	50	134	324.5572	.02436	6	7	3.06	0.46	0.46	17.36	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-467D	22.45357	0.01	50	134	962.819	.02111	5.8	21	1.76	0.27	0.28	11.07	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-468D	22.1883	0.01	50	134	944.1349	.02024	5.8	21	1.76	0.27	0.28	10.93	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-469D	9.791935	0.01	50	134	1008.969	.01614	5.6	30	1.44	0.17	0.18	2.54	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-472C	23.03285	0.01	50	134	1203.261	.01786	5.6	30	1.44	0.17	0.18	5.97	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-473C	17.82288	0.01	50	134	1063.405	.01754	5.4	30	1.39	0.16	0.17	4.21	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-474C	12.2754	0.01	50	134	1110.231	.01314	5.4	30	1.39	0.16	0.17	2.9	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-477B	43.00267	0.01	50	124	1338.546	.01081	5.2	30	1.34	0.1	0.11	6.34	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-478B	24.22798	0.01	50	124	1359.03	.01162	5.2	30	1.34	0.1	0.11	3.57	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-481A	43.73671	0.01	50	124	1025.332	.00931	5	30	1.29	0.1	0.11	6.21	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-482A	31.52768	0.01	50	124	1379.392	.00760	5	30	1.29	0.1	0.11	4.47	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-483A	11.18117	0.01	50	134	1218.293	.00668	4.8	30	1.23	0.11	0.12	1.65	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-484B	8.933609	0.01	50	134	705.7387	.01905	5.6	17	1.88	0.29	0.3	5.04	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-485B	17.95707	0.01	50	134	1293.867	.01639	5.4	30	1.39	0.16	0.17	4.24	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-486B	27.3928	0.01	50	134	1187.969	.01414	5.4	30	1.39	0.16	0.17	6.47	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135

AREA 3 - TIME OF CONCENTRATION (TC) CALCULATIONS

ALPINE	3-487B	32.68858	0.01	50	124	1161.914	.01080	5.2	30	1.34	0.1	0.11	4.82	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-488B	40.79897	0.01	50	124	1179.925	.01273	5	30	1.29	0.1	0.11	5.79	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-489B	26.67925	0.01	50	124	1022.045	.01145	5	30	1.29	0.1	0.11	3.79	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-490B	12.18276	0.01	50	134	1125.193	.00824	4.8	30	1.23	0.11	0.12	1.8	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-491B	6.977108	0.01	50	134	1257.934	.00628	4.8	30	1.23	0.11	0.12	1.03	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-494B	7.739516	0.01	50	134	746.0605	.01012	5	30	1.29	0.13	0.14	1.4	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-495B	13.2	0.01	50	134	1090.983	.00881	4.8	30	1.23	0.11	0.12	1.95	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-496B	16.9	0.01	50	134	1124.605	.00719	4.8	30	1.23	0.11	0.12	2.49	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-499A	4.263299	0.01	50	134	897.1664	.00387	4.640956	30	1.19	0.1	0.11	0.56	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-500B	11.85064	0.01	50	134	917.5118	.00913	4.845301	30	1.25	0.11	0.12	1.78	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-501B	16.92238	0.01	50	134	937.9327	.00804	4.722522	30	1.21	0.1	0.11	2.25	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-502B	1.87	0.01	50	134	344.28	.00622	4.637229	23	1.35	0.15	0.16	0.4	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-505A	6.479397	0.01	50	134	1045.932	.00395	4.578894	30	1.18	0.1	0.11	0.84	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-506B	14.0237	0.01	50	134	878.3696	.00787	4.700446	30	1.21	0.1	0.11	1.87	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-507B	10.72272	0.01	50	134	1012.925	.00544	4.5879	30	1.18	0.1	0.11	1.39	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-510A	23.66004	0.01	50	134	946.9955	.00661	4.490718	30	1.15	0.1	0.11	2.99	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-511A	15.84464	0.01	50	134	688.2606	.00955	4.414144	30	1.13	0.1	0.11	1.97	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-512A	18.19956	0.01	50	134	1134.091	.00730	4.304244	30	1.11	0.1	0.11	2.22	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-513A	11.49387	0.01	50	134	1216.852	.00440	4.200946	30	1.08	0.1	0.11	1.37	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-514B	10.0586	0.01	50	134	1516.636	.01180	5	30	1.29	0.13	0.14	1.82	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-515B	14.8714	0.01	50	134	1220.906	.00830	4.8	30	1.23	0.11	0.12	2.2	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-516B	16.6962	0.01	50	134	1182.406	.00720	4.8	30	1.23	0.11	0.12	2.46	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-517B	9.5639	0.01	50	134	1043.198	.00569	4.543052	30	1.17	0.1	0.11	1.23	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-518B	18.22853	0.01	50	134	630.8741	.00569	4.543052	30	1.17	0.1	0.11	2.35	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-519B	28.76347	0.01	50	134	664.8974	.00454	4.469783	30	1.15	0.1	0.11	3.64	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-520B	20.40425	0.01	50	134	640.2464	.00436	4.430544	30	1.14	0.1	0.11	2.56	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-521B	22.76331	0.01	50	134	982.9007	.00817	4.374778	30	1.12	0.1	0.11	2.8	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-522B	15.8799	0.01	50	134	880.9362	.00668	4.267971	30	1.1	0.1	0.11	1.92	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-523B	11.92374	0.01	50	134	1311.085	.00408	4.188797	30	1.08	0.1	0.11	1.42	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	3-526A	6.847241	0.01	50	134	1359.879	.00719	4.140186	30	1.06	0.1	0.11	0.8	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135

AREA 4 - TIME OF CONCENTRATION (TC) CALCULATIONS

Project	Subarea	Area (acres	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.	Tc-calculat	Intensity (ir	Cu	Cd	Flowrate (c	Tc Equation
ALPINE	4-1A	40.37403	0.01	50	124	977.5602	.02722	6.2	30	1.59	0.14	0.15	9.63	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-2A	46.45262	0.01	50	124	1145.646	.02486	6	30	1.54	0.13	0.14	10.02	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-3A	43.88417	0.01	50	124	1308.005	.01832	6	30	1.54	0.13	0.14	9.46	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-4A	35.92789	0.01	50	134	1210.933	.01524	5.8	30	1.49	0.19	0.2	10.71	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-5A	39.00141	0.01	50	134	1264.664	.01223	5.6	30	1.44	0.17	0.18	10.11	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-6A	37.72229	0.01	50	134	1415.114	.00984	5.6	30	1.44	0.17	0.18	9.78	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-7A	27.5976	0.01	50	134	1207.727	.01172	5.4	30	1.39	0.16	0.17	6.52	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-8A	26.81428	0.01	50	134	1213.527	.01151	5.2	30	1.34	0.14	0.15	5.39	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-9A	26.38418	0.01	50	134	1060.495	.01002	5	30	1.29	0.13	0.14	4.76	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-10A	26.75949	0.01	50	134	1093.621	.01221	4.8	30	1.23	0.11	0.12	3.95	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-11A	23.6	0.01	50	134	802.9523	.00980	4.8	30	1.23	0.11	0.12	3.48	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-12A	32.13	0.01	50	134	1127.733	.00849	4.6	30	1.18	0.1	0.11	4.17	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-13B	11.0906	0.01	50	134	785.4734	.01433	5.8	19	1.85	0.28	0.29	5.95	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-14B	16.51454	0.01	50	134	857.7365	.01707	5.8	19	1.85	0.28	0.29	8.86	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-15B	32.6477	0.01	50	134	1355.267	.01217	5.8	30	1.49	0.19	0.2	9.73	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-16B	42.84345	0.01	50	134	1356.491	.01136	5.6	30	1.44	0.17	0.18	11.11	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-17B	44.26486	0.01	50	134	1259.155	.00906	5.4	30	1.39	0.16	0.17	10.46	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-18B	44.79703	0.01	50	134	1162.91	.01173	5.2	30	1.34	0.14	0.15	9	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-19B	48.54135	0.01	50	134	1301.824	.00931	5.2	30	1.34	0.14	0.15	9.76	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-20B	31.28249	0.01	50	134	1117.844	.01118	5	30	1.29	0.13	0.14	5.65	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-21B	14.8	0.01	50	134	1151.637	.00719	4.8	30	1.23	0.11	0.12	2.18	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-22B	13.6	0.01	50	134	1203.222	.00685	4.6	30	1.18	0.1	0.11	1.77	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-25A	33.3	0.01	50	134	1295	.00710	4.6	30	1.18	0.1	0.11	4.32	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-26A	26.19	0.01	50	134	856	.01020	4.4	30	1.13	0.1	0.11	3.26	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-27A	35.3	0.01	50	134	969	.00770	4.4	30	1.13	0.1	0.11	4.39	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-28A	31.5	0.01	50	134	921	.00500	4.2	30	1.08	0.1	0.11	3.74	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	4-29A	25.6	0.01	50	134	1200	.00810	4.2	30	1.08	0.1	0.11	3.04	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135

AREA 5 - TIME OF CONCENTRATION (TC) CALCULATIONS

Project	Subarea	Area (acres	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.	Tc-calculat	Intensity (ir	Cu	Cd	Flowrate (c	Tc Equation
ALPINE	5-1A	28.25211	0.01	50	124	1025.778	.02625	6	30	1.54	0.13	0.14	6.09	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-2A	33.04264	0.01	50	124	1348.59	.02157	6	30	1.54	0.13	0.14	7.12	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-3A	26.63325	0.01	50	124	1122.888	.01722	5.8	30	1.49	0.12	0.13	5.16	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-4A	30.91447	0.01	50	134	1226.681	.01653	5.8	30	1.49	0.19	0.2	9.21	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-5A	30.30443	0.01	50	134	1212.133	.01549	5.6	30	1.44	0.17	0.18	7.85	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-6A	31.26484	0.01	50	134	1174.077	.01167	5.4	30	1.39	0.16	0.17	7.39	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-7A	32.90517	0.01	50	134	1269.651	.01090	5.2	30	1.34	0.14	0.15	6.61	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-8A	30.88432	0.01	50	134	1150.895	.01200	5.2	30	1.34	0.14	0.15	6.21	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-9A	26.84632	0.01	50	134	1077.865	.00961	5	30	1.29	0.13	0.14	4.85	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-10A	25.98685	0.01	50	134	1158.682	.01115	4.8	30	1.23	0.11	0.12	3.84	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-11A	14.3	0.01	50	134	979.1247	.00999	4.8	30	1.23	0.11	0.12	2.11	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-12A	5.1	0.01	50	134	931.4815	.01063	4.6	30	1.18	0.1	0.11	0.66	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-13B	9.990376	0.01	50	134	384.8601	.02052	6	9	2.72	0.42	0.42	11.41	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-14B	16.40841	0.01	50	134	1006.336	.01874	5.8	22	1.72	0.26	0.27	7.62	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-15B	25.73897	0.01	50	134	1166.911	.01925	5.6	30	1.44	0.17	0.18	6.67	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-16B	25.51226	0.01	50	134	1180.279	.01460	5.6	30	1.44	0.17	0.18	6.61	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-17B	23.36144	0.01	50	134	1214.351	.01195	5.4	30	1.39	0.16	0.17	5.52	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-18B	24.50169	0.01	50	134	1166.276	.01161	5.2	30	1.34	0.14	0.15	4.92	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-19B	21.8459	0.01	50	134	1150.565	.01287	5	30	1.29	0.13	0.14	3.95	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-20B	18.63168	0.01	50	134	1025.081	.00996	5	30	1.29	0.13	0.14	3.36	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-21B	23.15517	0.01	50	134	1144.264	.01096	4.8	30	1.23	0.11	0.12	3.42	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-22B	18.44342	0.01	50	134	853.6369	.01170	4.6	30	1.18	0.1	0.11	2.39	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-23B	22.15363	0.01	50	134	805.6421	.01314	4.6	30	1.18	0.1	0.11	2.88	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-26A	13.80944	0.01	50	134	823.4053	.00807	5.8	24	1.66	0.24	0.25	5.73	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-27A	15.97969	0.01	50	134	748.8016	.01284	5.6	20	1.74	0.26	0.27	7.51	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-28A	10.07853	0.01	50	134	611.4049	.00869	5.6	18	1.83	0.28	0.29	5.35	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-29A	15.13418	0.01	50	134	1613.77	.00513	5.4	30	1.39	0.16	0.17	3.58	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-30B	10.04748	0.01	50	134	2097.493	.01240	5.2	30	1.34	0.14	0.15	2.02	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-31B	21.21059	0.01	50	134	1537.598	.01192	5	30	1.29	0.13	0.14	3.83	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-32B	22.56023	0.01	50	134	1248.241	.01173	5	30	1.29	0.13	0.14	4.07	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-33B	26.27314	0.01	50	134	1402.077	.01292	4.8	30	1.23	0.11	0.12	3.88	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-34B	17.92138	0.01	50	134	925.6877	.01151	4.6	30	1.18	0.1	0.11	2.33	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-35B	12.94038	0.01	50	134	723.5723	.00682	4.6	30	1.18	0.1	0.11	1.68	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-36B	15.32785	0.01	50	134	1164.25	.00641	4.6	30	1.18	0.1	0.11	1.99	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-39A	21.52635	0.01	50	134	1448.179	.00705	4.6	30	1.18	0.1	0.11	2.79	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	5-40A	17.35506	0.01	50	134	1055.624	.00382	4.6	30	1.18	0.1	0.11	2.25	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135

AREA 6 - TIME OF CONCENTRATION (TC) CALCULATIONS

Project	Subarea	Area (acres	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.	Tc-calculat	Intensity (ir	Cu	Cd	Flowrate (c	Tc Equation
ALPINE	6-1A	19.33392	0.01	50	124	1437.631	.02376	5.955948	30	1.53	0.12	0.13	3.85	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	6-2A	21.24025	0.01	50	124	1256.16	.02089	5.856097	30	1.51	0.12	0.13	4.17	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	6-3A	23.84661	0.01	50	124	1129.291	.01946	5.719126	30	1.47	0.11	0.12	4.21	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	6-4A	29.12069	0.01	50	134	1119.322	.01652	5.583853	30	1.44	0.17	0.18	7.55	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	6-5A	35.3251	0.01	50	134	1173.542	.01445	5.424006	30	1.39	0.16	0.17	8.35	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	6-6A	48.36785	0.01	50	134	1421.098	.01251	5.250636	30	1.35	0.14	0.15	9.79	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	6-7A	44.30353	0.01	50	134	1501.362	.01165	5.054215	30	1.3	0.13	0.14	8.06	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	6-8A	27.48762	0.01	50	134	1517.467	.01319	4.884901	30	1.26	0.12	0.13	4.5	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	6-9A	14.45473	0.01	50	134	1085.911	.01219	4.713406	30	1.21	0.1	0.11	1.92	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	6-10A	14.60988	0.01	50	134	1739.533	.01180	4.554376	30	1.17	0.1	0.11	1.88	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	6-11B	20.57468	0.01	50	134	3145.9	.01267	5.285516	30	1.36	0.15	0.16	4.48	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	6-12B	17.99788	0.01	50	134	1106.701	.01365	4.989481	30	1.28	0.12	0.13	2.99	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	6-13B	31.19624	0.01	50	134	1180.433	.01653	4.840502	30	1.24	0.11	0.12	4.64	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	6-14B	32.83635	0.01	50	134	1091.034	.01167	4.708589	30	1.21	0.1	0.11	4.37	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	6-15B	30.95834	0.01	50	134	1031.087	.01331	4.604997	30	1.18	0.1	0.11	4.02	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	6-16B	20.54068	0.01	50	134	613.9247	.01079	4.507462	30	1.16	0.1	0.11	2.62	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	6-19A	46.5111	0.01	50	134	1339.055	.01015	4.408265	30	1.13	0.1	0.11	5.78	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	6-20A	49.63933	0.01	50	134	931.8438	.00836	4.272529	30	1.1	0.1	0.11	6.01	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	6-21A	39.11821	0.01	50	134	700.842	.01171	4.204469	30	1.08	0.1	0.11	4.65	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	6-22A	22.68554	0.01	50	134	684.3736	.00593	4.156179	30	1.07	0.1	0.11	2.67	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	6-23A	20.13734	0.01	50	134	1174.272	.00358	4.102613	30	1.05	0.1	0.11	2.33	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135

AREA 7 - TIME OF CONCENTRATION (TC) CALCULATIONS

Project	Subarea	Area (acres	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.	Tc-calculat	Intensity (ir	Cu	Cd	Flowrate (c	Tc Equation
ALPINE	7-1A	8.552641	0.01	50	124	1121.474	.18951	7.303144	11	3.01	0.37	0.38	9.78	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-2A	38.08371	0.01	50	124	1806.677	.08048	7.210512	23	2.1	0.23	0.24	19.19	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-3A	34.63402	0.01	50	124	1660.038	.05056	7.026443	28	1.87	0.19	0.2	12.95	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-4A	9.54579	0.01	50	124	1542.35	.03738	6.905219	29	1.8	0.18	0.19	3.26	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-5A	21.71489	0.01	50	124	1348.027	.03985	6.771779	26	1.86	0.19	0.2	8.08	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-6A	24.18982	0.01	50	124	1056.376	.03752	6.618224	21	2.01	0.22	0.23	11.18	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-7A	25.33205	0.01	50	124	858.3939	.03256	6.445379	18	2.11	0.23	0.24	12.83	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-8A	34.40586	0.01	50	124	804.4498	.04053	6.268675	17	2.1	0.23	0.24	17.34	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-9A	40.55741	0.01	50	124	761.8767	.03231	6.098446	19	1.94	0.2	0.21	16.52	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-10A	45.71987	0.01	50	124	638.7436	.02808	5.979561	17	2.01	0.22	0.23	21.14	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-11A	32.05428	0.01	50	124	1693.088	.02336	5.90157	30	1.52	0.12	0.13	6.33	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-12A	28.65561	0.01	50	124	1189.99	.01821	5.782615	30	1.49	0.12	0.13	5.55	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-13A	29.08128	0.01	50	124	1044.68	.02011	5.667508	30	1.46	0.11	0.12	5.1	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-14A	30.79791	0.01	50	134	1180.558	.01704	5.531098	30	1.42	0.17	0.18	7.87	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-15A	26.48545	0.01	50	134	994.6283	.01519	5.400199	30	1.39	0.16	0.17	6.26	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-16A	31.98301	0.01	50	134	1092.651	.01173	5.255397	30	1.35	0.14	0.15	6.48	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-17A	33.86622	0.01	50	134	1034.811	.01109	5.103551	30	1.31	0.13	0.14	6.21	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-18A	37.24404	0.01	50	134	1084.731	.01538	4.953187	30	1.27	0.12	0.13	6.15	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-19A	39.12384	0.01	50	134	1123.805	.01669	4.79586	30	1.23	0.11	0.12	5.77	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-20A	40.41199	0.01	50	134	1073.729	.01436	4.645795	30	1.19	0.1	0.11	5.29	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-21A	39.94998	0.01	50	134	1058.444	.01254	4.510458	30	1.16	0.1	0.11	5.1	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-22A	34.03299	0.01	50	134	1083.382	.01133	4.365542	30	1.12	0.1	0.11	4.19	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-23B	10.27707	0.01	50	134	2335.137	.01830	5.596013	30	1.44	0.17	0.18	2.66	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-24B	25.28276	0.01	50	134	2077.656	.01459	5.304313	30	1.36	0.15	0.16	5.5	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-25B	13.87049	0.01	50	134	881.44	.01244	5.086675	30	1.31	0.13	0.14	2.54	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-26B	21.5582	0.01	50	134	1052.281	.01465	4.957423	30	1.27	0.12	0.13	3.56	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-27B	29.72453	0.01	50	134	1149.384	.01488	4.807379	30	1.24	0.11	0.12	4.42	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-28B	31.50153	0.01	50	134	1228.277	.01191	4.643234	30	1.19	0.1	0.11	4.12	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-29B	24.62875	0.01	50	134	1057.647	.01372	4.501521	30	1.16	0.1	0.11	3.14	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-30B	24.94119	0.01	50	134	1146.292	.01126	4.361078	30	1.12	0.1	0.11	3.07	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-33A	37.79158	0.01	50	134	851.9242	.00912	4.250977	30	1.09	0.1	0.11	4.53	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-34A	36.1201	0.01	50	134	744.2224	.01224	4.196382	30	1.08	0.1	0.11	4.29	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-35A	29.59733	0.01	50	134	710.9682	.00837	4.153166	30	1.07	0.1	0.11	3.48	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
ALPINE	7-36A	20.08155	0.01	50	134	501.497	.00502	4.122658	30	1.06	0.1	0.11	2.34	Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135

ATTACHMENT 2

Existing Conditions
LAR04 Input Tables

AREA 1 - LAR04 INPUT (NON-BURN CONDITIONS)

COD	JOB	LOC	P	S	SOI	IMP	AREA	TC	Z	RA	C	LENGT	SLOPE	Z	PIPE	Q	P	H	C	Z	H	H	R	BTN	SDN	DP	VE
006	3434	1	A		134	1	7.662	30	A	21	2	1486	000658									1					
006	3434	2	A		134	1	26.01	30	A	21	2	1087	000472														
006	3434	3	A		134	1	26.73	30	A	21	2	1193	000498														
006	3434	4	A		134	1	28.21	30	A	21	2	1000	000379														
006	3434	5	A		134	1	45	30	A	21	2	1157	000482														
006	3434	6	A		134	1	46.5	30	A	21	2	857	000740														
006	3434	7	A		134	1	57.44	30	A	21	2	875	000728														
006	3434	8	A		134	1	51.08	30	A	21	2	828	000444														
006	3434	9	A		134	1	38.43	30	A	21	2	889	000437														
006	3434	10	A		134	1	25.56	30	A	21	2	679	000391														
006	3434	11	A		134	1	0	99	A	21									1			2					

AREA 1 - LAR04 INPUT (BURN CONDITIONS)

COD	JOB	LOC	P	S	SOI	IMP	AREA	TC	Z	RA	C	LENGT	SLOPE	Z	PIPE	Q	P	H	C	Z	H	H	R	BTN	SDN	DP	VE
006	3434	1	A		334	1	7.662	30	A	21	2	1486	000658									1					
006	3434	2	A		334	1	26.01	30	A	21	2	1087	000472														
006	3434	3	A		334	1	26.73	30	A	21	2	1193	000498														
006	3434	4	A		334	1	28.21	30	A	21	2	1000	000379														
006	3434	5	A		334	1	45	30	A	21	2	1157	000482														
006	3434	6	A		334	1	46.5	30	A	21	2	857	000740														
006	3434	7	A		334	1	57.44	30	A	21	2	875	000728														
006	3434	8	A		334	1	51.08	30	A	21	2	828	000444														
006	3434	9	A		334	1	38.43	30	A	21	2	889	000437														
006	3434	10	A		334	1	25.56	30	A	21	2	679	000391														
006	3434	11	A		334	1	0	99	A	21									1			2					

AREA 1A - LAR04 INPUT (NON-BURN CONDITIONS)

COD	JOB	LOC	P	S	SOI	IMP	AREA	TC	Z	RA	C	LENGT	SLOPE	Z	PIPE	Q	P	H	C	Z	H	H	R	BTN	SDN	DP	VE
006	3434	1	A		134	1	13.36	30	A	21	2	1347.1	000807									1					
006	3434	2	A		134			99	A	21									1			2					

AREA 1A - LAR04 INPUT (BURN CONDITIONS)

COD	JOB	LOC	P	S	SOI	IMP	AREA	TC	Z	RA	C	LENGT	SLOPE	Z	PIPE	Q	P	H	C	Z	H	H	R	BTN	SDN	DP	VE
006	3434	1	A		334	1	13.36	30	A	21	2	1347.1	000807									1					
006	3434	2	A		334			99	A	21									1			2					

AREA 1B - LAR04 INPUT (NON-BURN CONDITIONS)

COD	JOB	LOC	P	S	SOI	IMP	AREA	TC	Z	RA	C	LENGT	SLOPE	Z	PIPE	Q	P	H	C	Z	H	H	R	BTN	SDN	DP	VE
006	3434	1	A		134	1	8.74	30	A	22	2	927	000604									1					
006	3434	2	A		134	1	15.94	30	A	22	2	908	000579														
006	3434	3	A		134	1	10.63	30	A	22	2	660	000860														
006	3434	4	A		134			99	A	22									1			2					

AREA 1B - LAR04 INPUT (BURN CONDITIONS)

COD	JOB	LOC	P	S	SOI	IMP	AREA	TC	Z	RA	C	LENGT	SLOPE	Z	PIPE	Q	P	H	C	Z	H	H	R	BTN	SDN	DP	VE
006	3434	1	A		334	1	8.74	30	A	22	2	927	000604									1					
006	3434	2	A		334	1	15.94	30	A	22	2	908	000579														
006	3434	3	A		334	1	10.63	30	A	22	2	660	000860														
006	3434	4	A		334			99	A	22									1			2					

AREA 2 - LAR04 INPUT (NON-BURN CONDITIONS)

COD	JOB	LOC	P	S	SOI	IMP	AREA	TC	Z	RA	C	LENGT	SLOPE	Z	PIPE	Q	P	H	C	Z	H	H	R	BTN	SDN	DP	VE
006	3434	1	A		134	1	13.9	5	A	39	1	408	016339									1					
006	3434	2	A		134	1	13.0	11	A	38	1	1284	014000														
006	3434	3	B		134	1	15.8	5	A	39	1	537	016873														
006	3434	4	B		134	1	24.3	11	A	38	1	1362	011857														
006	3434	5	A	B	120		0.0	0	A	38										1							
006	3434	6	A		120		0.0	99	A	38											B						
006	3434	7	B		134	1	7.1	5	A	39	1	554	016719														
006	3434	8	B		120	1	14.2	7	A	38	1	1079	016394														
006	3434	9	A	B	120		0.0	0	A	38										1							
006	3434	10	A		120		0.0	99	A	38											B						
006	3434	11	A		120	1	50.6	11	A	37	1	1575	007659														
006	3434	12	B		120	1	8.3	5	A	37	1	819	024940														
006	3434	13	B		120	1	6.0	5	A	37	1	473	010945														
006	3434	14	A	B	120		0.0	0	A	37										1							
006	3434	15	A		120		0.0	99	A	37											B						
006	3434	16	A		120	1	12.5	9	A	36	1	1133	006226														
006	3434	17	B		120	1	10.9	6	A	39	1	919	015512														
006	3434	18	C		120	1	12.6	7	A	39	1	1025	013550														
006	3434	19	B	C	120		0.0	0	A	38										1							
006	3434	20	B		120		0.0	99	A	38											C						
006	3434	21	B		120	1	8.4	5	A	38	1	663	012042														
006	3434	22	C		120	1	11.6	6	A	38	1	745	015132														
006	3434	23	C		120	1	14.0	6	A	38	1	793	010760														
006	3434	24	B	C	120		0.0	0	A	38										1							
006	3434	25	B		120		0.0	99	A	38											C						
006	3434	26	B		120	1	19.0	7	A	37	1	1006	013251														
006	3434	27	B		120	1	19.4	9	A	36	1	1258	008740														
006	3434	28	A	B	120		0.0	0	A	36										1							
006	3434	29	A		120		0.0	99	A	36											B						
006	3434	30	B		120	1	17.1	6	A	36	1	773	019691														
006	3434	31	B		120	1	18.7	6	A	36	1	790	014025														
006	3434	32	A	B	120		0.0	0	A	36										1							
006	3434	33	A		120		0.0	99	A	36											B						
006	3434	34	A		120	1	34.0	11	A	35		1317	006084														
006	3434	35	A		134	1	34.6	13	A	35	1	1247	007592														
006	3434	36	A		134	1	41.7	9	A	34	1	731	006978														

AREA 2 - LAR04 INPUT (NON-BURN CONDITIONS)

006	3434	37	A		134	1	53.1	19	A	34	1	1686	005585														
006	3434	38	A		134	1	31.6	29	A	33	1	1997	003319														
006	3434	39	B		134	1	8.9	8	A	33	1	733	018097														
006	3434	40	B		134	1	17.2	13	A	33	1	1226	008231														
006	3434	41	A	B	134		0.0	0	A	32										1							
006	3434	42	A		134		0.0	99	A	32											B						
006	3434	43	A		134	1	15.8	18	A	32	1	1076	002170														
006	3434	44	A		134	1	16.6	16	A	31	1	926	002751														
006	3434	45	A		134	1	15.0	15	A	30	1	756	002341														
006	3434	46	A		134	1	13.2	17	A	29	1	873	002930														
006	3434	47	A		134	1	14.9	15	A	29	1	800	003467														
006	3434	48	A		134	1	17.9	18	A	28	1	836	002619														
006	3434	49	B		134	1	2.4	10	A	31	1	543	002719														
006	3434	50	B		134	1	6.5	11	A	31	1	652	003398														
006	3434	51	B		134	1	9.2	11	A	30	1	585	003107														
006	3434	52	B		134	1	11.8	11	A	29	1	586	003982														
006	3434	53	B		134	1	8.8	14	A	29	1	763	003509														
006	3434	54	B		134	1	3.0	20	A	28	1	908	002600														
006	3434	55	A	B	134		0.0	0	A	28										1							
006	3434	56	A		134		0.0	99	A	28											B						
006	3434	57	B		134	1	3.4	12	A	31	1	686	002217														
006	3434	58	B		134	1	7.5	12	A	31	1	673	003337														
006	3434	59	B		134	1	12.9	12	A	30	1	656	003216														
006	3434	60	B		134	1	20.5	18	A	29	1	893	002686														
006	3434	61	B		134	1	9.2	12	A	29	1	531	002277														
006	3434	62	B		134	1	9.3	10	A	29	1	496	003109														
006	3434	63	B		134	1	9.0	9	A	29	1	458	003953														
006	3434	64	B		134	1	8.1	12	A	28	1	416	000951														
006	3434	65	A	B	134		0.0	0	A	28										1							
006	3434	66	A		134		0.0	99	A	28											B						
006	3434	67	B		134	1	10.2	16	A	29	1	834	002935														
006	3434	68	B		134	1	17.2	9	A	29	1	436	003224														
006	3434	69	B		134	1	18.7	13	A	28	1	566	002234														
006	3434	70	B		134	1	46.8	14	A	28	1	644	002458														
006	3434	71	B		134		0.0	5	A	28	2	1885	000129														
006	3434	72	A	B	134		0.0	0	A	28										1							
006	3434	73	A		134		0.0	99	A	28											B						

AREA 2 - LAR04 INPUT (NON-BURN CONDITIONS)

006	3434	74	A		134	1	22.8	30	A	28	2	1259	002178														
006	3434	75	B		134	1	6.9	8	A	28	2	347	003217														
006	3434	76	B		134	1	10.5	19	A	28	2	831	002383														
006	3434	77	A	B	134		0.0	0	A	28										1							
006	3434	78	A		134		0.0	99	A	28											B						
006	3434	79	A		134	1	30.7	30	A	27	2	923	002043														
006	3434	80	A		134	1	11.6	30	A	27	2	1385	001322														
006	3434	81	B		134	1	6.8	15	A	28	2	724	002532														
006	3434	82	B		134	1	13.5	30	A	27	2	1285	002168														
006	3434	83	A	B	134		0.0	0	A	27										1							
006	3434	84	A		134		0.0	99	A	27											B						
006	3434	85	A		134	1	15.2	30	A	27	2	993	001750														
006	3434	86	A		134	1	16.0	30	A	26	2	1164	001583														
006	3434	87	A		134	1	11.7	30	A	26	2	1084	001507														
006	3434	88	B		134	1	4.5	14	A	28	2	635	002460														
006	3434	89	B		134	1	6.4	18	A	28	2	842	002703														
006	3434	90	B		134	1	12.5	30	A	27	2	1181	002378														
006	3434	91	B		134	1	10.6	30	A	27	2	994	001949														
006	3434	92	B		134	1	8.8	30	A	27	2	903	001708														
006	3434	93	B		134	1	5.2	30	A	26	2	829	001516														
006	3434	94	A	B	134		0.0	0	A	26										1							
006	3434	95	A		134		0.0	99	A	26											B						
006	3434	96	A		134	1	12.0	30	A	26	2	838	001013														
006	3434	97	A		134	1	5.7	30	A	26	2	855	001310														
006	3434	98	A		124	1	1.2	30	A	25	2	442	000831														
006	3434	99	B		134	1	9.3	30	A	27	2	998	001536														
006	3434	100	B		134	1	15.7	30	A	26	2	1390	001547														
006	3434	101	B		134	1	18.3	30	A	26	2	1139	001683														
006	3434	102	B		134	1	25.4	30	A	26	2	1059	001385														
006	3434	103	B		134	1	17.7	30	A	25	2	931	001281														
006	3434	104	A	B	124		0.0	0	A	25										1							
006	3434	105	A		124		0.0	99	A	25											B						
006	3434	106	A		124	1	16.4	30	A	25	2	811	001185														
006	3434	107	A		124	1	16.0	30	A	24	2	1071	001048														
006	3434	108	A		134	1	13.5	30	A	24	2	1180	000865														
006	3434	109	B		134	1	4.7	5	A	33	1	249	021274														
006	3434	110	B		134	1	12.7	12	A	33	1	941	007483														

AREA 2 - LAR04 INPUT (NON-BURN CONDITIONS)

006	3434	111	B		134	1	12.2	25	A	32	1	1503	002325														
006	3434	112	B		134	1	31.6	30	A	30	1	1950	002481														
006	3434	113	B		134	1	25.6	14	A	29	1	732	003272														
006	3434	114	B		134	1	27.2	16	A	29	1	826	002638														
006	3434	115	B		134	1	19.7	21	A	29	2	968	002227														
006	3434	116	B		134	1	12.7	19	A	28	2	830	002372														
006	3434	117	B		134	1	15.2	30	A	28	2	1193	002652														
006	3434	118	B		134	1	7.2	30	A	28	2	1110	001755														
006	3434	119	C		134	1	10.3	12	A	28	2	507	002527														
006	3434	120	C		134	1	12.5	30	A	28	2	1321	001914														
006	3434	121	B	C	134		0.0	0	A	27											1						
006	3434	122	B		134		0.0	99	A	27												C					
006	3434	123	B		134	1	12.5	30	A	27	2	888	001680														
006	3434	124	C		134	1	8.3	11	A	28	2	484	002702														
006	3434	125	C		134	1	15.5	21	A	28	2	961	002641														
006	3434	126	C		134	1	22.0	30	A	28	2	1258	002513														
006	3434	127	C		134	1	18.1	30	A	27	2	1117	001701														
006	3434	128	C		134	1	9.8	27	A	27	2	820	001625														
006	3434	129	B	C	134		0.0	0	A	27											1						
006	3434	130	B		134		0.0	99	A	27												C					
006	3434	131	B		134	1	18.6	30	A	27	2	912	001467														
006	3434	132	B		134	1	18.7	30	A	26	2	1274	001221														
006	3434	133	B		124	1	17.4	30	A	26	2	1103	001178														
006	3434	134	B		124	1	10.8	30	A	25	2	1118	001170														
006	3434	135	C		124	1	6.4	30	A	25	2	1001	001083														
006	3434	136	C		124	1	7.9	30	A	25	2	833	001192														
006	3434	137	B	C	124		0.0	0	A	25											1						
006	3434	138	B		124		0.0	99	A	25												C					
006	3434	139	B		124	1	19.9	30	A	24	2	1293	001079														
006	3434	140	A	B	134		0.0	0	A												1						
006	3434	141	A		134		0.0	99	A													B					
006	3434	142	A		134	1	26.7	30	A	24	2	1237	000746														
006	3434	143	A		134	1	22.5	30	A	23	2	1253	000681														
006	3434	144	A		134	1	11.4	30	A	23	2	1053	000644														
006	3434	145	A		134	1	2.8	30	A	23	2	455	000290														
006	3434	146	B		134	1	5.5	30	A	25	2	845	001594														
006	3434	147	B		134	1	11.9	30	A	25	2	960	001224														

AREA 2 - LAR04 INPUT (NON-BURN CONDITIONS)

006	3434	148	B		134	1	21.1	30	A	24	2	1305	001095														
006	3434	149	B		134	1	17.1	30	A	24	2	1173	000987														
006	3434	150	B		134	1	17.3	30	A	24	2	1140	000683														
006	3434	151	B		134	1	12.4	30	A	23	2	1026	000827														
006	3434	152	B		134	1	14.4	30	A	23	2	1356	000672														
006	3434	153	A	B	134		0.0	0	A	22										1							
006	3434	154	A		134		0.0	99	A	22											B						
006	3434	155	A		134	1	6.8	30	A	22	2	1038	000510														
006	3434	156	B		134	1	9.7	14	A	27	2	481	001278									1					
006	3434	157	B		134	1	9.4	30	A	27	2	992	002103														
006	3434	158	C		134	1	13.3	11	A	28	2	471	002540														
006	3434	159	C		134	1	12.6	30	A	27	2	982	002330														
006	3434	160	B	C	134	0	0.0	0	A	27										1							
006	3434	161	B		134	0	0.0	99	A	27											C						
006	3434	162	B		134	1	14.3	30	A	27	2	1008	001980														
006	3434	163	B		134	1	21.3	30	A	26	2	1171	001921														
006	3434	164	B		134	1	20.3	30	A	26	2	1183	001895														
006	3434	165	B		134	1	9.1	30	A	25	2	1032	001497														
006	3434	166	C		134	1	8.9	13	A	27	2	517	002021														
006	3434	167	C		134	1	11.3	30	A	26	2	1220	001689														
006	3434	168	C		134	1	19.9	30	A	26	2	1291	001541														
006	3434	169	C		134	1	13.6	30	A	25	2	1191	001518														
006	3434	170	B	C	134	0	0.0	0	A	25										1							
006	3434	171	B		134	0	0.0	99	A	25											C						
006	3434	172	C		134	1	16.1	12	A	27	2	431	002130														
006	3434	173	C		134	1	31.2	30	A	27	2	1204	002320														
006	3434	174	C		134	1	24.8	30	A	26	2	1096	001948														
006	3434	175	C		134	1	22.3	30	A	26	2	1184	002112														
006	3434	176	C		134	1	10.7	30	A	25	2	1135	001611														
006	3434	177	D		134	1	11.3	18	A	27	2	751	002682														
006	3434	178	D		134	1	24.6	30	A	27	2	1240	002308														
006	3434	179	D		134	1	21.7	30	A	26	2	1095	002002														
006	3434	180	D		134	1	26.9	30	A	25	2	1307	001959														
006	3434	181	D		134	1	21.7	30	A	25	2	1222	001335														
006	3434	182	C	D	134	0	0.0	0	A	25										1							
006	3434	183	C		134	0	0.0	99	A	25											D						
006	3434	184	C		134	1	21.5	30	A	25	2	785	000872														

006	3434	185	B	C	134	0	0.0	0	A	25										1							
006	3434	186	B		134	0	0.0	99	A	25											C						
006	3434	187	B		134	1	26.3	30	A	25	2	946	000932														
006	3434	188	B		134	1	16.6	30	A	24	2	1028	001114														
006	3434	189	B		134	1	12.2	30	A	24	2	1194	000944														
006	3434	190	B		134	1	8.0	30	A	24	2	1324	000808														
006	3434	191	C		134	1	12.3	30	A	26	2	1245	001518														
006	3434	192	C		134	1	25.1	30	A	25	2	1320	001364														
006	3434	193	C		134	1	21.8	30	A	25	2	1014	001300														
006	3434	194	C		134	1	16.2	30	A	24	2	1053	001108														
006	3434	195	C		134	1	8.2	30	A	24	2	1156	000825														
006	3434	196	B	C	134	0	0.0	0	A	23										1							
006	3434	197	B		134	0	0.0	99	A	23											C						
006	3434	198	B		134	1	8.1	30	A	23	2	844	001054														
006	3434	199	C		134	1	9.3	24	A	26	2	768	002460														
006	3434	200	C		134	1	16.3	30	A	26	2	992	002284														
006	3434	201	C		134	1	14.7	30	A	25	2	1104	001677														
006	3434	202	C		134	1	13.5	30	A	25	2	1176	001333														
006	3434	203	C		134	1	16.6	30	A	24	2	1304	001164														
006	3434	204	C		134	1	18.2	30	A	24	2	1076	001273														
006	3434	205	C		134	1	17.8	30	A	24	2	1017	000909														
006	3434	206	C		134	1	14.6	30	A	24	2	1273	000881														
006	3434	207	C		134	1	11.4	30	A	23	2	981	000747														
006	3434	208	C		134	1	11.2	30	A	23	2	917	001030														
006	3434	209	B	C	134	0	0.0	0	A	23										1							
006	3434	210	B		134	0	0.0	99	A	23											C						
006	3434	211	B		134	1	19.9	30	A	23	2	1098	000735														
006	3434	212	B		134	1	22.1	30	A	23	2	1084	000864														
006	3434	213	B		134	1	18.8	30	A	23	2	995	000756														
006	3434	214	A		134	1	15.2	30	A	22	2	893	000543														
006	3434	215	C		134	1	3.3	30	A	24	2	830	001087														
006	3434	216	C		134	1	5.2	30	A	23	2	1145	000747														
006	3434	217	C		134	1	5.7	30	A	23	2	1115	000860														
006	3434	218	C		134	1	7.6	30	A	23	2	988	000779														
006	3434	219	C		134	1	5.8	30	A	22	2	954	000452														
006	3434	220	B	C	134	0	0.0	0	A	22										1							
006	3434	221	B		134	0	0.0	99	A	22											C						

AREA 2 - LAR04 INPUT (NON-BURN CONDITIONS)

006	3434	222	B		134	1	6.7	30	A	22	2	625	000600														
006	3434	223	A	B	134	0	0.0	0	A	22											1						
006	3434	224	A		134	0	0.0	99	A	22												B					
006	3434	225	A		134	1	18.8	30	A	22	2	799	000880														
006	3434	226	A		134	1	17.2	30	A	22	2	822	000780														
006	3434	227	A		134	1	10.2	30	A	22	2	1130	000360														
006	3434	228	A		134	1	9.3	30	A	22	2	1122	000430														
006	3434	229	A		134	1	12.0	30	A	22	2	1139	000970														
006	3434	230	A		134	0	0.0	99	A	22										1			2				

AREA 2 - LAR04 INPUT (BURN CONDITIONS)

COD	JOB	LOC	P	S	SOI	IMP	AREA	TC	Z	RA	C	LENGT	SLOPE	Z	PIPE	Q	P	H	C	Z	H	H	R	BTN	SDN	DP	VE
006	3434	1	A		334	1	13.9	5	A	39	1	408	016339									1					
006	3434	2	A		334	1	13.0	11	A	38	1	1284	014000														
006	3434	3	B		334	1	15.8	5	A	39	1	537	016873														
006	3434	4	B		334	1	24.3	11	A	38	1	1362	011857														
006	3434	5	A	B	320		0.0	0	A	38										1							
006	3434	6	A		320		0.0	99	A	38											B						
006	3434	7	B		334	1	7.1	5	A	39	1	554	016719														
006	3434	8	B		320	1	14.2	7	A	38	1	1079	016394														
006	3434	9	A	B	320		0.0	0	A	38										1							
006	3434	10	A		320		0.0	99	A	38											B						
006	3434	11	A		320	1	50.6	11	A	37	1	1575	007659														
006	3434	12	B		320	1	8.3	5	A	37	1	819	024940														
006	3434	13	B		320	1	6.0	5	A	37	1	473	010945														
006	3434	14	A	B	320		0.0	0	A	37										1							
006	3434	15	A		320		0.0	99	A	37											B						
006	3434	16	A		320	1	12.5	9	A	36	1	1133	006226														
006	3434	17	B		320	1	10.9	6	A	39	1	919	015512														
006	3434	18	C		320	1	12.6	7	A	39	1	1025	013550														
006	3434	19	B	C	320		0.0	0	A	38										1							
006	3434	20	B		320		0.0	99	A	38											C						
006	3434	21	B		320	1	8.4	5	A	38	1	663	012042														
006	3434	22	C		320	1	11.6	6	A	38	1	745	015132														
006	3434	23	C		320	1	14.0	6	A	38	1	793	010760														
006	3434	24	B	C	320		0.0	0	A	38										1							
006	3434	25	B		320		0.0	99	A	38											C						
006	3434	26	B		320	1	19.0	7	A	37	1	1006	013251														
006	3434	27	B		320	1	19.4	9	A	36	1	1258	008740														
006	3434	28	A	B	320		0.0	0	A	36										1							
006	3434	29	A		320		0.0	99	A	36											B						
006	3434	30	B		320	1	17.1	6	A	36	1	773	019691														
006	3434	31	B		320	1	18.7	6	A	36	1	790	014025														
006	3434	32	A	B	320		0.0	0	A	36										1							
006	3434	33	A		320		0.0	99	A	36											B						
006	3434	34	A		320	1	34.0	11	A	35		1317	006084														
006	3434	35	A		334	1	34.6	13	A	35	1	1247	007592														
006	3434	36	A		334	1	41.7	9	A	34	1	731	006978														

AREA 2 - LAR04 INPUT (BURN CONDITIONS)

006	3434	37	A		334	1	53.1	19	A	34	1	1686	005585														
006	3434	38	A		334	1	31.6	29	A	33	1	1997	003319														
006	3434	39	B		334	1	8.9	8	A	33	1	733	018097														
006	3434	40	B		334	1	17.2	13	A	33	1	1226	008231														
006	3434	41	A	B	334		0.0	0	A	32										1							
006	3434	42	A		334		0.0	99	A	32											B						
006	3434	43	A		334	1	15.8	18	A	32	1	1076	002170														
006	3434	44	A		334	1	16.6	16	A	31	1	926	002751														
006	3434	45	A		334	1	15.0	15	A	30	1	756	002341														
006	3434	46	A		334	1	13.2	17	A	29	1	873	002930														
006	3434	47	A		334	1	14.9	15	A	29	1	800	003467														
006	3434	48	A		334	1	17.9	18	A	28	1	836	002619														
006	3434	49	B		334	1	2.4	10	A	31	1	543	002719														
006	3434	50	B		334	1	6.5	11	A	31	1	652	003398														
006	3434	51	B		334	1	9.2	11	A	30	1	585	003107														
006	3434	52	B		334	1	11.8	11	A	29	1	586	003982														
006	3434	53	B		334	1	8.8	14	A	29	1	763	003509														
006	3434	54	B		334	1	3.0	20	A	28	1	908	002600														
006	3434	55	A	B	334		0.0	0	A	28										1							
006	3434	56	A		334		0.0	99	A	28											B						
006	3434	57	B		334	1	3.4	12	A	31	1	686	002217														
006	3434	58	B		334	1	7.5	12	A	31	1	673	003337														
006	3434	59	B		334	1	12.9	12	A	30	1	656	003216														
006	3434	60	B		334	1	20.5	18	A	29	1	893	002686														
006	3434	61	B		334	1	9.2	12	A	29	1	531	002277														
006	3434	62	B		334	1	9.3	10	A	29	1	496	003109														
006	3434	63	B		334	1	9.0	9	A	29	1	458	003953														
006	3434	64	B		334	1	8.1	12	A	28	1	416	000951														
006	3434	65	A	B	334		0.0	0	A	28										1							
006	3434	66	A		334		0.0	99	A	28											B						
006	3434	67	B		334	1	10.2	16	A	29	1	834	002935														
006	3434	68	B		334	1	17.2	9	A	29	1	436	003224														
006	3434	69	B		334	1	18.7	13	A	28	1	566	002234														
006	3434	70	B		334	1	46.8	14	A	28	1	644	002458														
006	3434	71	B		334		0.0	5	A	28	2	1885	000129														
006	3434	72	A	B	334		0.0	0	A	28										1							
006	3434	73	A		334		0.0	99	A	28											B						

AREA 2 - LAR04 INPUT (BURN CONDITIONS)

006	3434	74	A		334	1	22.8	30	A	28	2	1259	002178														
006	3434	75	B		334	1	6.9	8	A	28	2	347	003217														
006	3434	76	B		334	1	10.5	19	A	28	2	831	002383														
006	3434	77	A	B	334		0.0	0	A	28										1							
006	3434	78	A		334		0.0	99	A	28											B						
006	3434	79	A		334	1	30.7	30	A	27	2	923	002043														
006	3434	80	A		334	1	11.6	30	A	27	2	1385	001322														
006	3434	81	B		334	1	6.8	15	A	28	2	724	002532														
006	3434	82	B		334	1	13.5	30	A	27	2	1285	002168														
006	3434	83	A	B	334		0.0	0	A	27										1							
006	3434	84	A		334		0.0	99	A	27											B						
006	3434	85	A		334	1	15.2	30	A	27	2	993	001750														
006	3434	86	A		334	1	16.0	30	A	26	2	1164	001583														
006	3434	87	A		334	1	11.7	30	A	26	2	1084	001507														
006	3434	88	B		334	1	4.5	14	A	28	2	635	002460														
006	3434	89	B		334	1	6.4	18	A	28	2	842	002703														
006	3434	90	B		334	1	12.5	30	A	27	2	1181	002378														
006	3434	91	B		334	1	10.6	30	A	27	2	994	001949														
006	3434	92	B		334	1	8.8	30	A	27	2	903	001708														
006	3434	93	B		334	1	5.2	30	A	26	2	829	001516														
006	3434	94	A	B	334		0.0	0	A	26										1							
006	3434	95	A		334		0.0	99	A	26											B						
006	3434	96	A		334	1	12.0	30	A	26	2	838	001013														
006	3434	97	A		334	1	5.7	30	A	26	2	855	001310														
006	3434	98	A		324	1	1.2	30	A	25	2	442	000831														
006	3434	99	B		334	1	9.3	30	A	27	2	998	001536														
006	3434	100	B		334	1	15.7	30	A	26	2	1390	001547														
006	3434	101	B		334	1	18.3	30	A	26	2	1139	001683														
006	3434	102	B		334	1	25.4	30	A	26	2	1059	001385														
006	3434	103	B		334	1	17.7	30	A	25	2	931	001281														
006	3434	104	A	B	324		0.0	0	A	25										1							
006	3434	105	A		324		0.0	99	A	25											B						
006	3434	106	A		324	1	16.4	30	A	25	2	811	001185														
006	3434	107	A		324	1	16.0	30	A	24	2	1071	001048														
006	3434	108	A		334	1	13.5	30	A	24	2	1180	000865														
006	3434	109	B		334	1	4.7	5	A	33	1	249	021274														
006	3434	110	B		334	1	12.7	12	A	33	1	941	007483														

AREA 2 - LAR04 INPUT (BURN CONDITIONS)

006	3434	111	B		334	1	12.2	25	A	32	1	1503	002325														
006	3434	112	B		334	1	31.6	30	A	30	1	1950	002481														
006	3434	113	B		334	1	25.6	14	A	29	1	732	003272														
006	3434	114	B		334	1	27.2	16	A	29	1	826	002638														
006	3434	115	B		334	1	19.7	21	A	29	2	968	002227														
006	3434	116	B		334	1	12.7	19	A	28	2	830	002372														
006	3434	117	B		334	1	15.2	30	A	28	2	1193	002652														
006	3434	118	B		334	1	7.2	30	A	28	2	1110	001755														
006	3434	119	C		334	1	10.3	12	A	28	2	507	002527														
006	3434	120	C		334	1	12.5	30	A	28	2	1321	001914														
006	3434	121	B	C	334		0.0	0	A	27											1						
006	3434	122	B		334		0.0	99	A	27												C					
006	3434	123	B		334	1	12.5	30	A	27	2	888	001680														
006	3434	124	C		334	1	8.3	11	A	28	2	484	002702														
006	3434	125	C		334	1	15.5	21	A	28	2	961	002641														
006	3434	126	C		334	1	22.0	30	A	28	2	1258	002513														
006	3434	127	C		334	1	18.1	30	A	27	2	1117	001701														
006	3434	128	C		334	1	9.8	27	A	27	2	820	001625														
006	3434	129	B	C	334		0.0	0	A	27											1						
006	3434	130	B		334		0.0	99	A	27												C					
006	3434	131	B		334	1	18.6	30	A	27	2	912	001467														
006	3434	132	B		334	1	18.7	30	A	26	2	1274	001221														
006	3434	133	B		324	1	17.4	30	A	26	2	1103	001178														
006	3434	134	B		324	1	10.8	30	A	25	2	1118	001170														
006	3434	135	C		324	1	6.4	30	A	25	2	1001	001083														
006	3434	136	C		324	1	7.9	30	A	25	2	833	001192														
006	3434	137	B	C	324		0.0	0	A	25											1						
006	3434	138	B		324		0.0	99	A	25												C					
006	3434	139	B		324	1	19.9	30	A	24	2	1293	001079														
006	3434	140	A	B	334		0.0	0	A												1						
006	3434	141	A		334		0.0	99	A													B					
006	3434	142	A		334	1	26.7	30	A	24	2	1237	000746														
006	3434	143	A		334	1	22.5	30	A	23	2	1253	000681														
006	3434	144	A		334	1	11.4	30	A	23	2	1053	000644														
006	3434	145	A		334	1	2.8	30	A	23	2	455	000290														
006	3434	146	B		334	1	5.5	30	A	25	2	845	001594														
006	3434	147	B		334	1	11.9	30	A	25	2	960	001224														

AREA 2 - LAR04 INPUT (BURN CONDITIONS)

006	3434	148	B		334	1	21.1	30	A	24	2	1305	001095														
006	3434	149	B		334	1	17.1	30	A	24	2	1173	000987														
006	3434	150	B		334	1	17.3	30	A	24	2	1140	000683														
006	3434	151	B		334	1	12.4	30	A	23	2	1026	000827														
006	3434	152	B		334	1	14.4	30	A	23	2	1356	000672														
006	3434	153	A	B	334		0.0	0	A	22											1						
006	3434	154	A		334		0.0	99	A	22												B					
006	3434	155	A		334	1	6.8	30	A	22	2	1038	000510														
006	3434	156	B		334	1	9.7	14	A	27	2	481	001278										1				
006	3434	157	B		334	1	9.4	30	A	27	2	992	002103														
006	3434	158	C		334	1	13.3	11	A	28	2	471	002540														
006	3434	159	C		334	1	12.6	30	A	27	2	982	002330														
006	3434	160	B	C	334	0	0.0	0	A	27											1						
006	3434	161	B		334	0	0.0	99	A	27												C					
006	3434	162	B		334	1	14.3	30	A	27	2	1008	001980														
006	3434	163	B		334	1	21.3	30	A	26	2	1171	001921														
006	3434	164	B		334	1	20.3	30	A	26	2	1183	001895														
006	3434	165	B		334	1	9.1	30	A	25	2	1032	001497														
006	3434	166	C		334	1	8.9	13	A	27	2	517	002021														
006	3434	167	C		334	1	11.3	30	A	26	2	1220	001689														
006	3434	168	C		334	1	19.9	30	A	26	2	1291	001541														
006	3434	169	C		334	1	13.6	30	A	25	2	1191	001518														
006	3434	170	B	C	334	0	0.0	0	A	25											1						
006	3434	171	B		334	0	0.0	99	A	25												C					
006	3434	172	C		334	1	16.1	12	A	27	2	431	002130														
006	3434	173	C		334	1	31.2	30	A	27	2	1204	002320														
006	3434	174	C		334	1	24.8	30	A	26	2	1096	001948														
006	3434	175	C		334	1	22.3	30	A	26	2	1184	002112														
006	3434	176	C		334	1	10.7	30	A	25	2	1135	001611														
006	3434	177	D		334	1	11.3	18	A	27	2	751	002682														
006	3434	178	D		334	1	24.6	30	A	27	2	1240	002308														
006	3434	179	D		334	1	21.7	30	A	26	2	1095	002002														
006	3434	180	D		334	1	26.9	30	A	25	2	1307	001959														
006	3434	181	D		334	1	21.7	30	A	25	2	1222	001335														
006	3434	182	C	D	334	0	0.0	0	A	25											1						
006	3434	183	C		334	0	0.0	99	A	25												D					
006	3434	184	C		334	1	21.5	30	A	25	2	785	000872														

AREA 2 - LAR04 INPUT (BURN CONDITIONS)

006	3434	185	B	C	334	0	0.0	0	A	25										1						
006	3434	186	B		334	0	0.0	99	A	25											C					
006	3434	187	B		334	1	26.3	30	A	25	2	946	000932													
006	3434	188	B		334	1	16.6	30	A	24	2	1028	001114													
006	3434	189	B		334	1	12.2	30	A	24	2	1194	000944													
006	3434	190	B		334	1	8.0	30	A	24	2	1324	000808													
006	3434	191	C		334	1	12.3	30	A	26	2	1245	001518													
006	3434	192	C		334	1	25.1	30	A	25	2	1320	001364													
006	3434	193	C		334	1	21.8	30	A	25	2	1014	001300													
006	3434	194	C		334	1	16.2	30	A	24	2	1053	001108													
006	3434	195	C		334	1	8.2	30	A	24	2	1156	000825													
006	3434	196	B	C	334	0	0.0	0	A	23										1						
006	3434	197	B		334	0	0.0	99	A	23											C					
006	3434	198	B		334	1	8.1	30	A	23	2	844	001054													
006	3434	199	C		334	1	9.3	24	A	26	2	768	002460													
006	3434	200	C		334	1	16.3	30	A	26	2	992	002284													
006	3434	201	C		334	1	14.7	30	A	25	2	1104	001677													
006	3434	202	C		334	1	13.5	30	A	25	2	1176	001333													
006	3434	203	C		334	1	16.6	30	A	24	2	1304	001164													
006	3434	204	C		334	1	18.2	30	A	24	2	1076	001273													
006	3434	205	C		334	1	17.8	30	A	24	2	1017	000909													
006	3434	206	C		334	1	14.6	30	A	24	2	1273	000881													
006	3434	207	C		334	1	11.4	30	A	23	2	981	000747													
006	3434	208	C		334	1	11.2	30	A	23	2	917	001030													
006	3434	209	B	C	334	0	0.0	0	A	23										1						
006	3434	210	B		334	0	0.0	99	A	23											C					
006	3434	211	B		334	1	19.9	30	A	23	2	1098	000735													
006	3434	212	B		334	1	22.1	30	A	23	2	1084	000864													
006	3434	213	B		334	1	18.8	30	A	23	2	995	000756													
006	3434	214	A		334	1	15.2	30	A	22	2	893	000543													
006	3434	215	C		334	1	3.3	30	A	24	2	830	001087													
006	3434	216	C		334	1	5.2	30	A	23	2	1145	000747													
006	3434	217	C		334	1	5.7	30	A	23	2	1115	000860													
006	3434	218	C		334	1	7.6	30	A	23	2	988	000779													
006	3434	219	C		334	1	5.8	30	A	22	2	954	000452													
006	3434	220	B	C	334	0	0.0	0	A	22										1						
006	3434	221	B		334	0	0.0	99	A	22											C					

AREA 2 - LAR04 INPUT (BURN CONDITIONS)

006	3434	222	B		334	1	6.7	30	A	22	2	625	000600														
006	3434	223	A	B	334	0	0.0	0	A	22											1						
006	3434	224	A		334	0	0.0	99	A	22												B					
006	3434	225	A		334	1	18.8	30	A	22	2	799	000880														
006	3434	226	A		334	1	17.2	30	A	22	2	822	000780														
006	3434	227	A		334	1	10.2	30	A	22	2	1130	000360														
006	3434	228	A		334	1	9.3	30	A	22	2	1122	000430														
006	3434	229	A		334	1	12.0	30	A	22	2	1139	000970														
006	3434	230	A		334	0	0.0	99	A	22										1			2				

AREA 3 - LAR04 INPUT (NON-BURN CONDITIONS)

COD	JOB	LOC	P	S	SOI	IMP	AREA	TC	Z	RA	C	LENGT	SLOPE	Z	PIPE	Q	P	H	C	Z	H	H	R	BTN	SDN	DP	VE
006	3434	1	A		120	1	12.3	5	A	38	1	541	015141									1					
006	3434	2	A		134	1	30.7	13	A	38	1	1689	013251														
006	3434	3	A		134	1	35.3	15	A	36	1	1702	011474														
006	3434	4	B		134	1	9.0	8	A	38	1	884	015566														
006	3434	5	B		134	1	25.2	11	A	37	1	1509	021074														
006	3434	6	A	B	134	0	0.0	0	A	36										1							
006	3434	7	A		134	0	0.0	99	A	36											B						
006	3434	8	A		134	1	41.8	10	A	36	1	1114	015099														
006	3434	9	A		124	1	27.1	13	A	36	1	1090	009619														
006	3434	10	B		134	1	6.5	5	A	36	1	430	042604														
006	3434	11	B		134	1	15.9	9	A	36	1	1112	021130														
006	3434	12	A	B	124	0	0.0	0	A	35										1							
006	3434	13	A		124	0	0.0	99	A	35											B						
006	3434	14	A		124	1	21.2	13	A	35	1	885	005754														
006	3434	15	A		124	1	11.5	13	A	35	1	872	005423														
006	3434	16	B		124	1	11.3	9	A	35	1	811	016661														
006	3434	17	B		124	1	15.1	17	A	35	1	1461	013071														
006	3434	18	A	B	124	0	0.0	0	A	35										1							
006	3434	19	A		124	0	0.0	99	A	35											B						
006	3434	20	A		124	1	4.1	9	A	34	1	569	007099														
006	3434	21	B		124	1	2.8	5	A	35	1	346	023394														
006	3434	22	B		124	1	7.2	14	A	35	1	1221	012821														
006	3434	23	A	B	124	0	0.0	0	A	34										1							
006	3434	24	A		124	0	0.0	99	A	34											B						
006	3434	25	B		124	1	8.0	10	A	34	1	703	008349														
006	3434	26	A	B	124	0	0.0	0	A	34										1							
006	3434	27	A		124	0	0.0	99	A	34											B						
006	3434	28	A		124	1	9.8	9	A	34	1	581	006721														
006	3434	29	A		124	1	11.6	16	A	34	1	1068	006672														
006	3434	30	A		124	1	12.8	15	A	33	1	908	005324														
006	3434	31	A		124	1	15.0	16	A	32	1	808	004483														
006	3434	32	B		124	1	5.4	7	A	35	1	438	008768														
006	3434	33	B		124	1	7.1	18	A	34	1	986	003490														
006	3434	34	B		124	1	9.2	13	A	34	1	794	004285														
006	3434	35	B		124	1	10.5	12	A	34	1	739	004034														
006	3434	36	B		124	1	21.2	17	A	33	1	892	003824														

AREA 3 - LAR04 INPUT (NON-BURN CONDITIONS)

006	3434	37	B		124	1	28.0	18	A	32	1	884	004316														
006	3434	38	B		124	1	35.9	18	A	32	1	894	004287														
006	3434	39	B		124	1	44.0	24	A	31	1	933	003160														
006	3434	40	B		124	0	0.0	5	A	31	2	2066	000005														
006	3434	41	C		134	1	10.4	8	A	36	1	855	020664														
006	3434	42	C		124	1	10.9	9	A	36	1	767	015958														
006	3434	43	C		124	1	12.7	10	A	35	1	896	015339														
006	3434	44	D		124	1	8.9	11	A	36	1	1083	021389														
006	3434	45	C	D	124	0	0.0	0	A	35										1							
006	3434	46	C		124	0	0.0	99	A	35											D						
006	3434	47	C		124	1	2.0	8	A	35	1	586	008664														
006	3434	48	D		124	1	7.4	6	A	36	1	491	017498														
006	3434	49	D		124	1	21.3	17	A	35	1	1488	013975														
006	3434	50	C	D	124	0	0.0	0	A	35										1							
006	3434	51	C		124	0	0.0	99	A	35											D						
006	3434	52	D		124	1	4.2	5	A	35	1	205	015151														
006	3434	53	D		124	1	7.8	8	A	35	1	598	009980														
006	3434	54	C	D	124	0	0.0	0	A	35										1							
006	3434	55	C		124	0	0.0	99	A	35											D						
006	3434	56	C		124	1	36.8	30	A	35	1	1926	004616														
006	3434	57	D		124	1	4.4	7	A	35	1	509	012065														
006	3434	58	D		124	1	7.8	14	A	34	1	978	006881														
006	3434	59	C	D	124	0	0.0	0	A	34										1							
006	3434	60	C		124	0	0.0	99	A	34											D						
006	3434	61	C		124	1	8.4	8	A	34	1	470	007090														
006	3434	62	D		124	1	3.8	7	A	35	1	485	009748														
006	3434	63	D		124	1	7.3	12	A	34	1	744	004248														
006	3434	64	D		124	1	7.6	14	A	34	1	871	004806														
006	3434	65	C	D	124	0	0.0	0	A	34										1							
006	3434	66	C		124	0	0.0	99	A	34											D						
006	3434	67	C		124	1	22.2	12	A	34	1	693	005228														
006	3434	68	C		124	1	26.7	17	A	33	1	827	002618														
006	3434	69	D		124	1	8.2	7	A	35	1	547	018618														
006	3434	70	D		124	1	17.8	10	A	35	1	780	010566														
006	3434	71	D		124	1	19.7	12	A	34	1	878	009542														
006	3434	72	D		124	1	23.1	18	A	34	1	1089	004589														
006	3434	73	C	D	124	0	0.0	0	A	33										1							

AREA 3 - LAR04 INPUT (NON-BURN CONDITIONS)

006	3434	74	C		124	0	0.0	99	A	33											D						
006	3434	75	C		124	1	41.8	15	A	33	1	822	003894														
006	3434	76	C		124	1	40.5	17	A	32	1	823	003639														
006	3434	77	C		124	1	46.9	22	A	32	1	987	003718														
006	3434	78	B	C	124	0	0.0	0	A	31										1							
006	3434	79	B		124	0	0.0	99	A	31											C						
006	3434	80	B		124	0	0.0	5	A	32	2	1062	000515														
006	3434	81	A	B	124	0	0.0	0	A	32										1							
006	3434	82	A		124	0	0.0	99	A	32											B						
006	3434	83	A		124	0	0.0	5	A	32	2	608	000419														
006	3434	84	B		134	1	10.9	7	A	35	1	695	022258														
006	3434	85	B		124	1	31.5	13	A	35	1	1282	018903														
006	3434	86	B		124	1	33.8	21	A	34	1	1379	007518														
006	3434	87	B		124	1	18.2	7	A	34	1	446	007018														
006	3434	88	B		124	1	10.2	10	A	34	1	622	005015														
006	3434	89	C		124	1	8.8	6	A	34	1	447	012846														
006	3434	90	C		124	1	11.4	16	A	34	1	1104	006474														
006	3434	91	B	C	124	0	0.0	0	A	33										1							
006	3434	92	B		124	0	0.0	99	A	33											C						
006	3434	93	B		124	1	12.0	12	A	33	1	636	004617														
006	3434	94	B		124	1	8.3	13	A	33	1	698	003287														
006	3434	95	A	B	124	0	0.0	0	A	32										1							
006	3434	96	A		124	0	0.0	99	A	32											B						
006	3434	97	B		124	1	13.5	12	A	35	1	1005	011865														
006	3434	98	B		124	1	10.3	10	A	34	1	847	017020														
006	3434	99	C		124	1	10.7	12	A	34	1	973	016410														
006	3434	100	B	C	124	0	0.0	0	A	34										1							
006	3434	101	B		124	0	0.0	99	A	34											C						
006	3434	102	B		124	1	18.5	16	A	34	1	1192	010191														
006	3434	103	C		124	1	5.9	9	A	34	1	663	014786														
006	3434	104	C		124	1	9.4	16	A	34	1	1306	014308														
006	3434	105	B	C	124	0	0.0	0	A	33										1							
006	3434	106	B		124	0	0.0	99	A	33											C						
006	3434	107	B		124	1	8.1	13	A	33	1	727	004132														
006	3434	108	C		124	1	9.1	11	A	33	1	852	018345														
006	3434	109	C		124	1	17.1	21	A	33	1	1098	004577														
006	3434	110	B	C	124	0	0.0	0	A	33										1							

AREA 3 - LAR04 INPUT (NON-BURN CONDITIONS)

006	3434	111	B		124	0	0.0	99	A	33											C						
006	3434	112	B		124	1	28.0	14	A	32	1	775	005071														
006	3434	113	B		124	0	0.0	5	A	32	2	415	000118														
006	3434	114	C		124	1	13.3	14	A	34	1	1112	010691														
006	3434	115	C		124	1	11.8	20	A	33	1	1067	004766														
006	3434	116	B	C	124	0	0.0	0	A	32											1						
006	3434	117	B		124	0	0.0	99	A	32												C					
006	3434	118	B		124	0	0.0	5	A	32	2	375	001553														
006	3434	119	A	B	124	0	0.0	0	A	32											1						
006	3434	120	A		124	0	0.0	99	A	32												B					
006	3434	121	A		124	1	44.5	30	A	32	2	1175	002650														
006	3434	122	A		124	1	42.8	30	A	31	2	1241	002035														
006	3434	123	A		124	1	32.0	30	A	30	2	1373	002016														
006	3434	124	A		134	1	18.9	30	A	30	2	1307	001659														
006	3434	125	B		124	1	28.2	12	A	31	2	466	002054														
006	3434	126	B		124	1	32.8	30	A	30	2	1355	002192														
006	3434	127	B		124	1	24.5	30	A	30	2	1234	001824														
006	3434	128	B		134	1	14.5	30	A	29	2	1328	001370														
006	3434	129	A	B	134	0	0.0	0	A	29											1						
006	3434	130	A		134	0	0.0	99	A	29												B					
006	3434	131	A		134	1	15.9	30	A	29	2	1094	001054														
006	3434	132	B		120	1	11.4	5	A	39	1	735	017363														
006	3434	133	B		120	1	12.4	6	A	39	1	834	016660														
006	3434	134	C		120	1	24.0	5	A	39	1	790	026598														
006	3434	135	B	C	120	0	0.0	0	A	39											1						
006	3434	136	B		120	0	0.0	99	A	39												C					
006	3434	137	B		120	1	6.3	5	A	38	1	732	014393														
006	3434	138	C		120	1	5.4	5	A	38	1	370	025467														
006	3434	139	C		120	1	20.7	6	A	38	1	960	022406														
006	3434	140	B	C	120	0	0.0	0	A	38											1						
006	3434	141	B		120	0	0.0	99	A	38												C					
006	3434	142	B		120	1	9.4	6	A	38	1	786	015274														
006	3434	143	C		120	1	7.2	5	A	38	1	471	034390														
006	3434	144	C		120	1	9.9	7	A	38	1	956	014850														
006	3434	145	B	C	120	0	0.0	0	A	37											1						
006	3434	146	B		120	0	0.0	99	A	37												C					
006	3434	147	C		134	1	14.4	7	A	38	1	748	015664														

006	3434	148	C		120	1	21.7	9	A	37	1	1601	020024														
006	3434	149	B	C	120	0	0.0	0	A	37											1						
006	3434	150	B		120	0	0.0	99	A	37												C					
006	3434	151	B		120	1	31.6	10	A	37	1	1197	005390														
006	3434	152	C		120	1	2.8	5	A	39	1	394	042203														
006	3434	153	C		120	1	4.8	5	A	38	1	601	034336														
006	3434	154	C		120	1	3.1	5	A	38	1	265	025332														
006	3434	155	D		120	1	3.2	5	A	39	1	423	047522														
006	3434	156	D		120	1	5.6	5	A	38	1	836	028165														
006	3434	157	C	D	120	0	0.0	0	A	38											1						
006	3434	158	C		120	0	0.0	99	A	38												D					
006	3434	159	C		120	1	17.9	10	A	37	1	1510	008547														
006	3434	160	B	C	120	0	0.0	0	A	37											1						
006	3434	161	B		120	0	0.0	99	A	37												C					
006	3434	162	C		120	1	8.9	5	A	39	1	314	025806														
006	3434	163	C		120	1	13.5	5	A	39	1	562	027801														
006	3434	164	D		120	1	12.0	6	A	39	1	979	034428														
006	3434	165	C	D	120	0	0.0	0	A	38											1						
006	3434	166	C		120	0	0.0	99	A	38												D					
006	3434	167	C		120	1	19.3	5	A	38	1	498	023254														
006	3434	168	C		120	1	17.2	7	A	38	1	986	008379														
006	3434	169	D		120	1	14.3	5	A	38	1	643	022906														
006	3434	170	D		120	1	13.9	5	A	38	1	873	034344														
006	3434	171	E		120	1	20.1	6	A	37	1	971	026201														
006	3434	172	D	E	120	0	0.0	0	A	37											1						
006	3434	173	D		120	0	0.0	99	A	37												E					
006	3434	174	D		120	1	16.7	6	A	37	1	777	009675														
006	3434	175	C	D	120	0	0.0	0	A	37											1						
006	3434	176	C		120	0	0.0	99	A	37												D					
006	3434	177	C		120	1	20.9	8	A	37	1	962	005124														
006	3434	178	B	C	120	0	0.0	0	A	37											1						
006	3434	179	B		120	0	0.0	99	A	37												C					
006	3434	180	B		120	1	44.1	13	A	36	1	1737	004583														
006	3434	181	C		120	1	12.4	6	A	37	1	758	014926														
006	3434	182	C		120	1	29.5	9	A	36	1	1406	014167														
006	3434	183	C		120	1	4.8	5	A	35	1	581	013575														
006	3434	184	D		134	1	6.3	5	A	36	1	534	021299														

006	3434	185	D		120	1	10.5	7	A	35	1	869	015477														
006	3434	186	C	D	120	0	0.0	0	A	35											1						
006	3434	187	C		120	0	0.0	99	A	35												D					
006	3434	188	C		120	1	11.1	6	A	35	1	695	012975														
006	3434	189	B	C	120	0	0.0	0	A	35											1						
006	3434	190	B		120	0	0.0	99	A	35												C					
006	3434	191	B		120	1	29.5	11	A	35	1	1284	003833														
006	3434	192	B		120	1	24.3	8	A	34	1	820	004418														
006	3434	193	B		134	1	19.7	9	A	34	1	739	006758														
006	3434	194	B		134	1	33.6	15	A	33	1	1446	009519														
006	3434	195	B		134	1	16.6	8	A	32	1	427	003615														
006	3434	196	B		134	1	20.7	17	A	32	1	1191	003815														
006	3434	197	B		134	1	24.1	15	A	32	1	1124	004581														
006	3434	198	C		134	1	11.4	7	A	37	1	758	022878														
006	3434	199	C		120	1	32.2	9	A	36	1	1279	011163														
006	3434	200	D		120	1	12.2	7	A	36	1	880	009513														
006	3434	201	C	D	120	0	0.0	0	A	36											1						
006	3434	202	C		120	0	0.0	99	A	36												D					
006	3434	203	C		134	1	36.4	18	A	35	1	1845	007014														
006	3434	204	D		134	1	13.1	8	A	35	1	697	012502														
006	3434	205	D		134	1	6.6	9	A	35	1	884	013023														
006	3434	206	C	D	134	0	0.0	0	A	35											1						
006	3434	207	C		134	0	0.0	99	A	35												D					
006	3434	208	C		134	1	39.9	12	A	34	1	1295	012816														
006	3434	209	D		134	1	10.3	9	A	35	1	809	011707														
006	3434	210	D		134	1	5.2	6	A	35	1	575	015612														
006	3434	211	E		134	1	4.5	6	A	35	1	454	008222														
006	3434	212	E		134	1	3.0	7	A	35	1	676	014919														
006	3434	213	D	E	134	0	0.0	0	A	34											1						
006	3434	214	D		134	0	0.0	99	A	34												E					
006	3434	215	D		134	1	5.6	7	A	34	1	658	017232														
006	3434	216	C	D	134	0	0.0	0	A	34											1						
006	3434	217	C		134	0	0.0	99	A	34												D					
006	3434	218	C		134	1	21.6	15	A	33	1	1364	008413														
006	3434	219	D		134	1	6.4	9	A	34	1	797	011968														
006	3434	220	D		134	1	14.1	12	A	33	1	1230	016411														
006	3434	221	C	D	134	0	0.0	0	A	33											1						

AREA 3 - LAR04 INPUT (NON-BURN CONDITIONS)

006	3434	222	C		134	0	0.0	99	A	33											D						
006	3434	223	C		134	1	35.3	21	A	33	1	1772	006488														
006	3434	224	B	C	134	0	0.0	0	A	32										1							
006	3434	225	B		134	0	0.0	99	A	32											C						
006	3434	226	B		134	1	11.5	11	A	32	1	516	001723														
006	3434	227	B		134	1	23.2	12	A	32	1	852	004396														
006	3434	228	C		134	1	7.8	12	A	32	1	876	005328														
006	3434	229	C		134	1	23.6	16	A	32	1	1228	005537														
006	3434	230	C		134	1	58.0	17	A	31	1	1154	005086														
006	3434	231	C		134	0	0.0	5	A	31	2	1615	000324														
006	3434	232	B	C	134	0	0.0	0	A	32										1							
006	3434	233	B		134	0	0.0	99	A	32											C						
006	3434	234	C		134	1	17.4	5	A	36	1	451	022146														
006	3434	235	C		134	1	37.2	12	A	35	1	1305	013026														
006	3434	236	C		124	1	11.1	9	A	35	1	728	012373														
006	3434	237	D		134	1	13.4	6	A	35	1	644	025345														
006	3434	238	D		134	1	20.9	13	A	35	1	1522	016398														
006	3434	239	C	D	124	0	0.0	0	A	35										1							
006	3434	240	C		124	0	0.0	99	A	35											D						
006	3434	241	C		124	1	28.0	12	A	34	1	920	008614														
006	3434	242	C		124	1	11.1	15	A	34	1	991	006669														
006	3434	243	D		134	1	6.9	9	A	35	1	976	021128														
006	3434	244	D		124	1	16.5	16	A	34	1	1268	011406														
006	3434	245	C	D	124	0	0.0	0	A	33										1							
006	3434	246	C		124	0	0.0	99	A	33											D						
006	3434	247	C		124	1	2.3	6	A	33	1	278	003741														
006	3434	248	D		134	1	6.3	6	A	34	1	511	018583														
006	3434	249	D		124	1	12.7	15	A	33	1	937	006685														
006	3434	250	C	D	124	0	0.0	0	A	33										1							
006	3434	251	C		124	0	0.0	99	A	33											D						
006	3434	252	C		124	1	24.0	18	A	33	1	1074	005993														
006	3434	253	C		124	1	23.1	19	A	32	1	1029	005778														
006	3434	254	C		124	0	0.0	5	A	32	2	982	000738														
006	3434	255	B	C	134	0	0.0	0	A	32										1							
006	3434	256	B		134	0	0.0	99	A	32											C						
006	3434	257	B		124	1	13.3	21	A	31	2	824	002933														
006	3434	258	B		124	1	16.8	30	A	31	2	1135	002646														

006	3434	259	C		124	1	24.1	26	A	31	2	920	002640														
006	3434	260	C		124	1	32.3	30	A	31	2	1488	002019														
006	3434	261	B	C	124	0	0.0	0	A	31										1							
006	3434	262	B		124	0	0.0	99	A	31											C						
006	3434	263	B		134	1	32.4	17	A	31	2	941	002198														
006	3434	264	B		134	1	28.5	21	A	30	2	1030	001678														
006	3434	265	B		134	1	22.1	30	A	29	2	1135	001228														
006	3434	266	A	B	134	0	0.0	0	A	29										1							
006	3434	267	A		134	0	0.0	99	A	29											B						
006	3434	268	A		134	1	17.9	18	A	29	2	780	001503														
006	3434	269	A		134	1	11.9	25	A	28	2	802	001032														
006	3434	270	A		134	1	9.7	28	A	28	2	825	000925														
006	3434	271	B		134	1	10.1	19	A	29	2	859	001874														
006	3434	272	B		134	1	9.7	28	A	28	2	903	001251														
006	3434	273	B		134	1	6.5	30	A	28	2	906	001128														
006	3434	274	A	B	134	0	0.0	0	A	28										1							
006	3434	275	A		134	0	0.0	99	A	28											B						
006	3434	276	A		134	1	17.8	30	A	27	2	946	000816														
006	3434	277	B		134	1	18.9	10	A	31	2	511	002970														
006	3434	278	B		134	1	24.6	19	A	31	2	1102	002872														
006	3434	279	B		134	1	17.5	21	A	30	2	1029	001909														
006	3434	280	B		134	1	15.9	19	A	29	2	877	001892														
006	3434	281	B		134	1	10.2	21	A	29	2	879	001649														
006	3434	282	C		134	1	12.9	9	A	31	2	576	004679														
006	3434	283	C		134	1	32.9	17	A	30	2	991	003481														
006	3434	284	C		134	1	47.3	23	A	30	2	1210	002430														
006	3434	285	C		134	1	33.7	30	A	29	2	1332	001584														
006	3434	286	B	C	134	0	0.0	0	A	29										1							
006	3434	287	B		134	0	0.0	99	A	29											C						
006	3434	288	B		134	1	29.9	30	A	28	2	1107	001108														
006	3434	289	B		134	1	13.5	30	A	27	2	1240	001137														
006	3434	290	A	B	124	0	0.0	0	A	27										1							
006	3434	291	A		124	0	0.0	99	A	27											B						
006	3434	292	A		124	1	12.5	30	A	27	2	574	000764														
006	3434	293	B		134	1	13.7	12	A	28	2	509	001888														
006	3434	294	B		134	1	17.9	30	A	27	2	1306	001031														
006	3434	295	A	B	124	0	0.0	0	A	27										1							

006	3434	296	A		124	0	0.0	99	A	27												B					
006	3434	297	A		124	1	21.5	30	A	26	2	953	000922														
006	3434	298	A		124	1	20.9	30	A	26	2	1287	000669														
006	3434	299	B		134	1	19.9	5	A	30	2	218	005244														
006	3434	300	B		134	1	20.8	17	A	30	2	911	002399														
006	3434	301	B		134	1	15.2	21	A	29	2	996	002184														
006	3434	302	B		134	1	23.8	23	A	29	2	1063	002137														
006	3434	303	B		134	1	33.5	30	A	28	2	1128	002022														
006	3434	304	B		134	1	29.8	30	A	27	2	1263	001375														
006	3434	305	B		124	1	16.4	30	A	27	2	1074	001102														
006	3434	306	B		124	1	9.8	30	A	26	2	1388	001052														
006	3434	307	A	B	124	0	0.0	0	A	26											1						
006	3434	308	A		124	0	0.0	99	A	26												B					
006	3434	309	B		134	1	14.2	9	A	35	1	997	019466														
006	3434	310	B		134	1	19.5	12	A	34	1	1064	006843														
006	3434	311	B		134	1	31.7	16	A	33	1	1522	008908														
006	3434	312	B		134	1	20.5	9	A	33	1	902	017495														
006	3434	313	B		134	1	19.2	17	A	32	1	1385	006604														
006	3434	314	C		134	1	6.9	7	A	33	1	688	020218														
006	3434	315	C		134	1	13.6	14	A	32	1	1422	013507														
006	3434	316	B	C	134	0	0.0	0	A	32											1						
006	3434	317	B		134	0	0.0	99	A	32												C					
006	3434	318	B		134	1	15.9	20	A	32	1	1259	003129														
006	3434	319	C		134	1	14.4	9	A	32	1	790	018095														
006	3434	320	C		134	1	27.1	16	A	32	1	1072	003479														
006	3434	321	B	C	134	0	0.0	0	A	32											1						
006	3434	322	B		134	0	0.0	99	A	32												C					
006	3434	323	B		134	1	8.5	12	A	31	1	605	002215														
006	3434	324	C		134	1	11.0	12	A	32	1	936	005764														
006	3434	325	C		134	1	9.1	11	A	31	1	726	004649														
006	3434	326	B	C	134	0	0.0	0	A	31											1						
006	3434	327	B		134	0	0.0	99	A	31												C					
006	3434	328	B		134	1	14.4	9	A	31	1	457	002623														
006	3434	329	C		134	1	8.1	7	A	32	1	469	006235														
006	3434	330	C		134	1	25.8	18	A	31	1	1150	004234														
006	3434	331	C		134	0	0.0	5	A	31	2	1048	001371														
006	3434	332	B	C	134	0	0.0	0	A	31											1						

006	3434	333	B		134	0	0.0	99	A	31											C						
006	3434	334	C		134	1	13.5	10	A	34	1	909	009636														
006	3434	335	C		134	1	17.3	13	A	33	1	1345	012900														
006	3434	336	C		134	1	29.6	21	A	33	1	2103	010196														
006	3434	337	D		134	1	9.0	10	A	34	1	974	012440														
006	3434	338	D		134	1	11.7	10	A	33	1	924	013738														
006	3434	339	D		134	1	25.5	17	A	33	1	1753	012448														
006	3434	340	C	D	134	0	0.0	0	A	32											1						
006	3434	341	C		134	0	0.0	99	A	32												D					
006	3434	342	C		134	1	39.5	21	A	32	1	1378	003394														
006	3434	343	C		134	1	38.2	20	A	31	1	1301	003706														
006	3434	344	C		134	0	0.0	5	A	31	2	603	000233														
006	3434	345	B	C	134	0	0.0	0	A	31											1						
006	3434	346	B		134	0	0.0	99	A	31												C					
006	3434	347	B		134	1	26.0	19	A	30	2	993	002585														
006	3434	348	B		134	1	13.4	21	A	30	2	974	001629														
006	3434	349	C		134	1	15.8	17	A	30	2	895	002570														
006	3434	350	C		134	1	9.5	23	A	30	2	1119	001846														
006	3434	351	B	C	134	0	0.0	0	A	29											1						
006	3434	352	B		134	0	0.0	99	A	29												C					
006	3434	353	B		134	1	17.8	30	A	29	2	1227	002182														
006	3434	354	B		134	1	17.8	30	A	28	2	1268	001899														
006	3434	355	B		134	1	14.7	30	A	28	2	1370	001517														
006	3434	356	C		134	1	12.2	18	A	30	2	997	002874														
006	3434	357	C		134	1	24.4	19	A	29	2	941	002776														
006	3434	358	C		134	1	36.6	30	A	29	2	1274	002528														
006	3434	359	C		134	1	20.6	30	A	28	2	1345	001491														
006	3434	360	B	C	134	0	0.0	0	A	27											1						
006	3434	361	B		134	0	0.0	99	A	27												C					
006	3434	362	B		134	1	23.7	30	A	27	2	1387	001266														
006	3434	363	C		134	1	16.0	6	A	39	1	706	015983														
006	3434	364	C		134	1	24.5	8	A	38	1	830	010613														
006	3434	365	C		134	1	28.0	9	A	38	1	991	011641														
006	3434	366	C		120	1	18.7	6	A	37	1	793	011016														
006	3434	367	D		134	1	14.9	7	A	37	1	801	023217														
006	3434	368	D		134	1	27.8	10	A	37	1	1131	013862														
006	3434	369	C	D	134	0	0.0	0	A	37											1						

006	3434	370	C		134	0	0.0	99	A	37											D						
006	3434	371	C		120	1	26.5	8	A	36	1	996	008100														
006	3434	372	C		120	1	23.6	6	A	36	1	587	003931														
006	3434	373	D		120	1	9.2	6	A	36	1	996	023413														
006	3434	374	C	D	120	0	0.0	0	A	36										1							
006	3434	375	C		120	0	0.0	99	A	36											D						
006	3434	376	C		120	1	31.4	10	A	35	1	1257	005884														
006	3434	377	C		134	1	18.6	11	A	35	1	858	005810														
006	3434	378	D		134	1	17.5	7	A	36	1	794	017368														
006	3434	379	D		134	1	25.7	11	A	35	1	1184	013713														
006	3434	380	C	D	134	0	0.0	0	A	35										1							
006	3434	381	C		134	0	0.0	99	A	35											D						
006	3434	382	C		134	1	33.6	12	A	35	1	1110	005774														
006	3434	383	C		134	1	44.7	15	A	34	1	1444	007679														
006	3434	384	D		134	1	14.0	10	A	34	1	1123	025901														
006	3434	385	C	D	134	0	0.0	0	A	34										1							
006	3434	386	C		134	0	0.0	99	A	34											D						
006	3434	387	C		134	1	30.9	17	A	34	1	1502	005408														
006	3434	388	D		134	1	7.7	5	A	34	1	477	025874														
006	3434	389	D		134	1	18.0	11	A	34	1	1098	017341														
006	3434	390	C	D	134	0	0.0	0	A	33										1							
006	3434	391	C		134	0	0.0	99	A	33											D						
006	3434	392	C		134	1	15.8	13	A	33	1	933	003418														
006	3434	393	C		134	1	15.4	18	A	32	1	1087	002409														
006	3434	394	C		134	1	13.9	14	A	31	1	788	002597														
006	3434	395	C		134	1	13.4	18	A	31	1	1027	002533														
006	3434	396	D		134	1	14.5	9	A	33	1	821	017430														
006	3434	397	D		134	1	13.8	11	A	32	1	822	005834														
006	3434	398	D		134	1	7.0	21	A	31	1	1261	002826														
006	3434	399	C	D	134	0	0.0	0	A	31										1							
006	3434	400	C		134	0	0.0	99	A	31											D						
006	3434	401	D		134	1	4.1	6	A	32	1	519	019214														
006	3434	402	D		134	1	14.7	19	A	31	1	1283	004474														
006	3434	403	C	D	134	0	0.0	0	A	31										1							
006	3434	404	C		134	0	0.0	99	A	31											D						
006	3434	405	C		134	1	12.4	11	A	31	1	617	002937														
006	3434	406	C		134	1	6.2	16	A	30	1	834	002318														

006	3434	407	C		134	1	9.5	5	A	30	1	230	003829														
006	3434	408	C		134	1	17.7	12	A	30	1	672	002723														
006	3434	409	D		134	1	7.4	5	A	33	1	442	030093														
006	3434	410	D		134	1	7.3	8	A	33	1	646	012404														
006	3434	411	E		134	1	8.4	7	A	33	1	686	019352														
006	3434	412	D	E	134	0	0.0	0	A	33											1						
006	3434	413	D		134	0	0.0	99	A	33												E					
006	3434	414	D		134	1	14.6	10	A	33	1	742	007094														
006	3434	415	D		134	1	7.7	9	A	32	1	653	005924														
006	3434	416	E		134	1	5.1	6	A	33	1	420	009460														
006	3434	417	E		134	1	11.8	14	A	32	1	1064	005809														
006	3434	418	D	E	134	0	0.0	0	A	32											1						
006	3434	419	D		134	0	0.0	99	A	32												E					
006	3434	420	D		134	1	14.9	12	A	31	1	697	003696														
006	3434	421	D		134	1	7.1	12	A	31	1	676	003076														
006	3434	422	D		134	1	2.4	21	A	30	1	1159	002628														
006	3434	423	C	D	134	0	0.0	0	A	30											1						
006	3434	424	C		134	0	0.0	99	A	30												D					
006	3434	425	D		134	1	13.2	6	A	36	1	724	026664														
006	3434	426	D		134	1	20.3	11	A	36	1	1265	014746														
006	3434	427	E		134	1	7.0	5	A	36	1	589	029640														
006	3434	428	E		134	1	7.1	10	A	36	1	1139	017017														
006	3434	429	D	E	134	0	0.0	0	A	35											1						
006	3434	430	D		134	0	0.0	99	A	35												E					
006	3434	431	E		134	1	15.0	11	A	36	1	1399	018787														
006	3434	432	D	E	134	0	0.0	0	A	35											1						
006	3434	433	D		134	0	0.0	99	A	35												E					
006	3434	434	E		134	1	7.6	8	A	35	1	762	015728														
006	3434	435	D	E	134	0	0.0	0	A	35											1						
006	3434	436	D		134	0	0.0	99	A	35												E					
006	3434	437	D		134	1	17.1	12	A	35	1	1179	011395														
006	3434	438	E		134	1	9.3	8	A	35	1	910	025870														
006	3434	439	D	E	134	0	0.0	0	A	34											1						
006	3434	440	D		134	0	0.0	99	A	34												E					
006	3434	441	D		134	1	19.0	10	A	34	1	931	012445														
006	3434	442	E		134	1	7.4	5	A	35	1	380	023158														
006	3434	443	E		134	1	25.8	10	A	35	1	1057	015041														

AREA 3 - LAR04 INPUT (NON-BURN CONDITIONS)

006	3434	444	E		134	1	27.2	14	A	34	1	1518	011247														
006	3434	445	D	E	134	0	0.0	0	A	33											1						
006	3434	446	D		134	0	0.0	99	A	33												E					
006	3434	447	D		134	1	38.3	17	A	33	1	1436	005735														
006	3434	448	E		134	1	10.9	11	A	33	1	1086	019712														
006	3434	449	D	E	134	0	0.0	0	A	33											1						
006	3434	450	D		134	0	0.0	99	A	33												E					
006	3434	451	D		134	1	18.0	13	A	33	1	949	003937														
006	3434	452	D		134	1	10.9	14	A	32	1	999	004261														
006	3434	453	D		134	1	18.7	13	A	31	1	935	005235														
006	3434	454	D		134	1	20.7	11	A	31	1	682	003769														
006	3434	455	D		134	1	19.5	17	A	30	1	943	002963														
006	3434	456	C	D	134	0	0.0	0	A	30											1						
006	3434	457	C		134	0	0.0	99	A	30												D					
006	3434	458	C		134	1	12.7	21	A	29	2	841	001261														
006	3434	459	C		134	1	9.4	17	A	29	2	832	002404														
006	3434	460	D		134	1	5.6	11	A	30	2	526	002162														
006	3434	461	D		134	1	8.6	24	A	29	2	1042	001822														
006	3434	462	C	D	134	0	0.0	0	A	29											1						
006	3434	463	C		134	0	0.0	99	A	29												D					
006	3434	464	C		134	1	10.5	16	A	29	2	781	002284														
006	3434	465	C		134	1	9.8	30	A	28	2	1159	001739														
006	3434	466	D		134	1	12.3	7	A	30	2	325	002436														
006	3434	467	D		134	1	22.5	21	A	29	2	963	002111														
006	3434	468	D		134	1	22.2	21	A	29	2	944	002024														
006	3434	469	D		134	1	9.8	30	A	28	2	1009	001614														
006	3434	470	C	D	134	0	0.0	0	A	28											1						
006	3434	471	C		134	0	0.0	99	A	28												D					
006	3434	472	C		134	1	23.0	30	A	28	2	1203	001786														
006	3434	473	C		134	1	17.8	30	A	27	2	1063	001754														
006	3434	474	C		134	1	12.3	30	A	27	2	1110	001314														
006	3434	475	B	C	134	0	0.0	0	A	27											1						
006	3434	476	B		134	0	0.0	99	A	27												C					
006	3434	477	B		124	1	43.0	30	A	26	2	1339	001081														
006	3434	478	B		124	1	24.2	30	A	26	2	1359	001162														
006	3434	479	A	B	124	0	0.0	0	A	26											1						
006	3434	480	A		124	0	0.0	99	A	26												B					

AREA 3 - LAR04 INPUT (NON-BURN CONDITIONS)

006	3434	481	A		124	1	43.7	30	A	25	2	1025	000931														
006	3434	482	A		124	1	31.5	30	A	25	2	1379	000760														
006	3434	483	A		134	1	11.2	30	A	24	2	1218	000668														
006	3434	484	B		134	1	8.9	17	A	28	2	706	001905														
006	3434	485	B		134	1	18.0	30	A	27	2	1294	001639														
006	3434	486	B		134	1	27.4	30	A	27	2	1188	001414														
006	3434	487	B		124	1	32.7	30	A	26	2	1162	001080														
006	3434	488	B		124	1	40.8	30	A	25	2	1180	001273														
006	3434	489	B		124	1	26.7	30	A	25	2	1022	001145														
006	3434	490	B		134	1	12.2	30	A	24	2	1125	000824														
006	3434	491	B		134	1	7.0	30	A	24	2	1258	000628														
006	3434	492	A	B	134	0	0.0	0	A	23											1						
006	3434	493	A		134	0	0.0	99	A	23												B					
006	3434	494	B		134	1	7.7	30	A	25	2	746	001012														
006	3434	495	B		134	1	13.2	30	A	24	2	1091	000881														
006	3434	496	B		134	1	16.9	30	A	24	2	1125	000719														
006	3434	497	A	B	134	0	0.0	0	A	23											1						
006	3434	498	A		134	0	0.0	99	A	23												B					
006	3434	499	A		134	1	4.263	30	A	23	2	897	000387														
006	3434	500	B		134	1	11.85	30	A	24	2	918	000913														
006	3434	501	B		134	1	16.92	30	A	24	2	938	000804														
006	3434	502	B		134	1	1.87	23	A	23	2	344	000622														
006	3434	503	A	B	134			0	A	23		0									1						
006	3434	504	A		134			99	A	23		0										B					
006	3434	505	A		134	1	6.479	30	A	23	2	1046	000395														
006	3434	506	B		134	1	14.02	30	A	24	2	878	000787														
006	3434	507	B		134	1	10.72	30	A	23	2	1013	000544														
006	3434	508	A	B	134			0	A	23		0									1						
006	3434	509	A		134			99	A	23		0										B					
006	3434	510	A		134	1	23.66	30	A	22	2	947	000661														
006	3434	511	A		134	1	15.84	30	A	22	2	688	000955														
006	3434	512	A		134	1	18.2	30	A	22	2	1134	000730														
006	3434	513	A		134	1	11.49	30	A	21	2	1217	000440														
006	3434	514	B		134	1	10.06	30	A	25	2	1517	001180														
006	3434	515	B		134	1	14.87	30	A	24	2	1221	000830														
006	3434	516	B		134	1	16.7	30	A	24	2	1182	000720														
006	3434	517	B		134	1	9.564	30	A	23	2	1043	000569														

AREA 3 - LAR04 INPUT (NON-BURN CONDITIONS)

006	3434	518	B		134	1	18.23	30	A	23	2	631	000569														
006	3434	519	B		134	1	28.76	30	A	22	2	665	000454														
006	3434	520	B		134	1	20.4	30	A	22	2	640	000436														
006	3434	521	B		134	1	22.76	30	A	22	2	983	000817														
006	3434	522	B		134	1	15.88	30	A	21	2	881	000668														
006	3434	523	B		134	1	11.92	30	A	21	2	1311	000408														
006	3434	524	A	B	134			0	A	21		0									1						
006	3434	525	A		134			99	A	21		0										B					
006	3434	526	A		134	1	6.847	30	A	21	2	1360	000719														
006	3434	527	A		134			99	A	21		0								1			2				

AREA 3 - LAR04 INPUT (BURN CONDITIONS)

COD	JOB	LOC	P	S	SOI	IMP	AREA	TC	Z	RA	C	LENGT	SLOPE	Z	PIPE	Q	P	H	C	Z	H	H	R	BTN	SDN	DP	VE
006	3434	1	A		320	1	12.3	5	A	38	1	541	015141									1					
006	3434	2	A		334	1	30.7	13	A	38	1	1689	013251														
006	3434	3	A		334	1	35.3	15	A	36	1	1702	011474														
006	3434	4	B		334	1	9.0	8	A	38	1	884	015566														
006	3434	5	B		334	1	25.2	11	A	37	1	1509	021074														
006	3434	6	A	B	334	0	0.0	0	A	36										1							
006	3434	7	A		334	0	0.0	99	A	36											B						
006	3434	8	A		334	1	41.8	10	A	36	1	1114	015099														
006	3434	9	A		324	1	27.1	13	A	36	1	1090	009619														
006	3434	10	B		334	1	6.5	5	A	36	1	430	042604														
006	3434	11	B		334	1	15.9	9	A	36	1	1112	021130														
006	3434	12	A	B	324	0	0.0	0	A	35										1							
006	3434	13	A		324	0	0.0	99	A	35											B						
006	3434	14	A		324	1	21.2	13	A	35	1	885	005754														
006	3434	15	A		324	1	11.5	13	A	35	1	872	005423														
006	3434	16	B		324	1	11.3	9	A	35	1	811	016661														
006	3434	17	B		324	1	15.1	17	A	35	1	1461	013071														
006	3434	18	A	B	324	0	0.0	0	A	35										1							
006	3434	19	A		324	0	0.0	99	A	35											B						
006	3434	20	A		324	1	4.1	9	A	34	1	569	007099														
006	3434	21	B		324	1	2.8	5	A	35	1	346	023394														
006	3434	22	B		324	1	7.2	14	A	35	1	1221	012821														
006	3434	23	A	B	324	0	0.0	0	A	34										1							
006	3434	24	A		324	0	0.0	99	A	34											B						
006	3434	25	B		324	1	8.0	10	A	34	1	703	008349														
006	3434	26	A	B	324	0	0.0	0	A	34										1							
006	3434	27	A		324	0	0.0	99	A	34											B						
006	3434	28	A		324	1	9.8	9	A	34	1	581	006721														
006	3434	29	A		324	1	11.6	16	A	34	1	1068	006672														
006	3434	30	A		324	1	12.8	15	A	33	1	908	005324														
006	3434	31	A		324	1	15.0	16	A	32	1	808	004483														
006	3434	32	B		324	1	5.4	7	A	35	1	438	008768														
006	3434	33	B		324	1	7.1	18	A	34	1	986	003490														
006	3434	34	B		324	1	9.2	13	A	34	1	794	004285														
006	3434	35	B		324	1	10.5	12	A	34	1	739	004034														
006	3434	36	B		324	1	21.2	17	A	33	1	892	003824														

AREA 3 - LAR04 INPUT (BURN CONDITIONS)

006	3434	37	B		324	1	28.0	18	A	32	1	884	004316														
006	3434	38	B		324	1	35.9	18	A	32	1	894	004287														
006	3434	39	B		324	1	44.0	24	A	31	1	933	003160														
006	3434	40	B		324	0	0.0	5	A	31	2	2066	000005														
006	3434	41	C		334	1	10.4	8	A	36	1	855	020664														
006	3434	42	C		324	1	10.9	9	A	36	1	767	015958														
006	3434	43	C		324	1	12.7	10	A	35	1	896	015339														
006	3434	44	D		324	1	8.9	11	A	36	1	1083	021389														
006	3434	45	C	D	324	0	0.0	0	A	35											1						
006	3434	46	C		324	0	0.0	99	A	35												D					
006	3434	47	C		324	1	2.0	8	A	35	1	586	008664														
006	3434	48	D		324	1	7.4	6	A	36	1	491	017498														
006	3434	49	D		324	1	21.3	17	A	35	1	1488	013975														
006	3434	50	C	D	324	0	0.0	0	A	35											1						
006	3434	51	C		324	0	0.0	99	A	35												D					
006	3434	52	D		324	1	4.2	5	A	35	1	205	015151														
006	3434	53	D		324	1	7.8	8	A	35	1	598	009980														
006	3434	54	C	D	324	0	0.0	0	A	35											1						
006	3434	55	C		324	0	0.0	99	A	35												D					
006	3434	56	C		324	1	36.8	30	A	35	1	1926	004616														
006	3434	57	D		324	1	4.4	7	A	35	1	509	012065														
006	3434	58	D		324	1	7.8	14	A	34	1	978	006881														
006	3434	59	C	D	324	0	0.0	0	A	34											1						
006	3434	60	C		324	0	0.0	99	A	34												D					
006	3434	61	C		324	1	8.4	8	A	34	1	470	007090														
006	3434	62	D		324	1	3.8	7	A	35	1	485	009748														
006	3434	63	D		324	1	7.3	12	A	34	1	744	004248														
006	3434	64	D		324	1	7.6	14	A	34	1	871	004806														
006	3434	65	C	D	324	0	0.0	0	A	34											1						
006	3434	66	C		324	0	0.0	99	A	34												D					
006	3434	67	C		324	1	22.2	12	A	34	1	693	005228														
006	3434	68	C		324	1	26.7	17	A	33	1	827	002618														
006	3434	69	D		324	1	8.2	7	A	35	1	547	018618														
006	3434	70	D		324	1	17.8	10	A	35	1	780	010566														
006	3434	71	D		324	1	19.7	12	A	34	1	878	009542														
006	3434	72	D		324	1	23.1	18	A	34	1	1089	004589														
006	3434	73	C	D	324	0	0.0	0	A	33											1						

AREA 3 - LAR04 INPUT (BURN CONDITIONS)

006	3434	74	C		324	0	0.0	99	A	33											D						
006	3434	75	C		324	1	41.8	15	A	33	1	822	003894														
006	3434	76	C		324	1	40.5	17	A	32	1	823	003639														
006	3434	77	C		324	1	46.9	22	A	32	1	987	003718														
006	3434	78	B	C	324	0	0.0	0	A	31										1							
006	3434	79	B		324	0	0.0	99	A	31											C						
006	3434	80	B		324	0	0.0	5	A	32	2	1062	000515														
006	3434	81	A	B	324	0	0.0	0	A	32										1							
006	3434	82	A		324	0	0.0	99	A	32											B						
006	3434	83	A		324	0	0.0	5	A	32	2	608	000419														
006	3434	84	B		334	1	10.9	7	A	35	1	695	022258														
006	3434	85	B		324	1	31.5	13	A	35	1	1282	018903														
006	3434	86	B		324	1	33.8	21	A	34	1	1379	007518														
006	3434	87	B		324	1	18.2	7	A	34	1	446	007018														
006	3434	88	B		324	1	10.2	10	A	34	1	622	005015														
006	3434	89	C		324	1	8.8	6	A	34	1	447	012846														
006	3434	90	C		324	1	11.4	16	A	34	1	1104	006474														
006	3434	91	B	C	324	0	0.0	0	A	33										1							
006	3434	92	B		324	0	0.0	99	A	33											C						
006	3434	93	B		324	1	12.0	12	A	33	1	636	004617														
006	3434	94	B		324	1	8.3	13	A	33	1	698	003287														
006	3434	95	A	B	324	0	0.0	0	A	32										1							
006	3434	96	A		324	0	0.0	99	A	32											B						
006	3434	97	B		324	1	13.5	12	A	35	1	1005	011865														
006	3434	98	B		324	1	10.3	10	A	34	1	847	017020														
006	3434	99	C		324	1	10.7	12	A	34	1	973	016410														
006	3434	100	B	C	324	0	0.0	0	A	34										1							
006	3434	101	B		324	0	0.0	99	A	34											C						
006	3434	102	B		324	1	18.5	16	A	34	1	1192	010191														
006	3434	103	C		324	1	5.9	9	A	34	1	663	014786														
006	3434	104	C		324	1	9.4	16	A	34	1	1306	014308														
006	3434	105	B	C	324	0	0.0	0	A	33										1							
006	3434	106	B		324	0	0.0	99	A	33											C						
006	3434	107	B		324	1	8.1	13	A	33	1	727	004132														
006	3434	108	C		324	1	9.1	11	A	33	1	852	018345														
006	3434	109	C		324	1	17.1	21	A	33	1	1098	004577														
006	3434	110	B	C	324	0	0.0	0	A	33										1							

AREA 3 - LAR04 INPUT (BURN CONDITIONS)

006	3434	111	B		324	0	0.0	99	A	33											C						
006	3434	112	B		324	1	28.0	14	A	32	1	775	005071														
006	3434	113	B		324	0	0.0	5	A	32	2	415	000118														
006	3434	114	C		324	1	13.3	14	A	34	1	1112	010691														
006	3434	115	C		324	1	11.8	20	A	33	1	1067	004766														
006	3434	116	B	C	324	0	0.0	0	A	32										1							
006	3434	117	B		324	0	0.0	99	A	32											C						
006	3434	118	B		324	0	0.0	5	A	32	2	375	001553														
006	3434	119	A	B	324	0	0.0	0	A	32										1							
006	3434	120	A		324	0	0.0	99	A	32											B						
006	3434	121	A		324	1	44.5	30	A	32	2	1175	002650														
006	3434	122	A		324	1	42.8	30	A	31	2	1241	002035														
006	3434	123	A		324	1	32.0	30	A	30	2	1373	002016														
006	3434	124	A		334	1	18.9	30	A	30	2	1307	001659														
006	3434	125	B		324	1	28.2	12	A	31	2	466	002054														
006	3434	126	B		324	1	32.8	30	A	30	2	1355	002192														
006	3434	127	B		324	1	24.5	30	A	30	2	1234	001824														
006	3434	128	B		334	1	14.5	30	A	29	2	1328	001370														
006	3434	129	A	B	334	0	0.0	0	A	29										1							
006	3434	130	A		334	0	0.0	99	A	29											B						
006	3434	131	A		334	1	15.9	30	A	29	2	1094	001054														
006	3434	132	B		320	1	11.4	5	A	39	1	735	017363														
006	3434	133	B		320	1	12.4	6	A	39	1	834	016660														
006	3434	134	C		320	1	24.0	5	A	39	1	790	026598														
006	3434	135	B	C	320	0	0.0	0	A	39										1							
006	3434	136	B		320	0	0.0	99	A	39											C						
006	3434	137	B		320	1	6.3	5	A	38	1	732	014393														
006	3434	138	C		320	1	5.4	5	A	38	1	370	025467														
006	3434	139	C		320	1	20.7	6	A	38	1	960	022406														
006	3434	140	B	C	320	0	0.0	0	A	38										1							
006	3434	141	B		320	0	0.0	99	A	38											C						
006	3434	142	B		320	1	9.4	6	A	38	1	786	015274														
006	3434	143	C		320	1	7.2	5	A	38	1	471	034390														
006	3434	144	C		320	1	9.9	7	A	38	1	956	014850														
006	3434	145	B	C	320	0	0.0	0	A	37										1							
006	3434	146	B		320	0	0.0	99	A	37											C						
006	3434	147	C		334	1	14.4	7	A	38	1	748	015664														

AREA 3 - LAR04 INPUT (BURN CONDITIONS)

006	3434	148	C		320	1	21.7	9	A	37	1	1601	020024														
006	3434	149	B	C	320	0	0.0	0	A	37											1						
006	3434	150	B		320	0	0.0	99	A	37												C					
006	3434	151	B		320	1	31.6	10	A	37	1	1197	005390														
006	3434	152	C		320	1	2.8	5	A	39	1	394	042203														
006	3434	153	C		320	1	4.8	5	A	38	1	601	034336														
006	3434	154	C		320	1	3.1	5	A	38	1	265	025332														
006	3434	155	D		320	1	3.2	5	A	39	1	423	047522														
006	3434	156	D		320	1	5.6	5	A	38	1	836	028165														
006	3434	157	C	D	320	0	0.0	0	A	38											1						
006	3434	158	C		320	0	0.0	99	A	38												D					
006	3434	159	C		320	1	17.9	10	A	37	1	1510	008547														
006	3434	160	B	C	320	0	0.0	0	A	37											1						
006	3434	161	B		320	0	0.0	99	A	37												C					
006	3434	162	C		320	1	8.9	5	A	39	1	314	025806														
006	3434	163	C		320	1	13.5	5	A	39	1	562	027801														
006	3434	164	D		320	1	12.0	6	A	39	1	979	034428														
006	3434	165	C	D	320	0	0.0	0	A	38											1						
006	3434	166	C		320	0	0.0	99	A	38												D					
006	3434	167	C		320	1	19.3	5	A	38	1	498	023254														
006	3434	168	C		320	1	17.2	7	A	38	1	986	008379														
006	3434	169	D		320	1	14.3	5	A	38	1	643	022906														
006	3434	170	D		320	1	13.9	5	A	38	1	873	034344														
006	3434	171	E		320	1	20.1	6	A	37	1	971	026201														
006	3434	172	D	E	320	0	0.0	0	A	37											1						
006	3434	173	D		320	0	0.0	99	A	37												E					
006	3434	174	D		320	1	16.7	6	A	37	1	777	009675														
006	3434	175	C	D	320	0	0.0	0	A	37											1						
006	3434	176	C		320	0	0.0	99	A	37												D					
006	3434	177	C		320	1	20.9	8	A	37	1	962	005124														
006	3434	178	B	C	320	0	0.0	0	A	37											1						
006	3434	179	B		320	0	0.0	99	A	37												C					
006	3434	180	B		320	1	44.1	13	A	36	1	1737	004583														
006	3434	181	C		320	1	12.4	6	A	37	1	758	014926														
006	3434	182	C		320	1	29.5	9	A	36	1	1406	014167														
006	3434	183	C		320	1	4.8	5	A	35	1	581	013575														
006	3434	184	D		334	1	6.3	5	A	36	1	534	021299														

AREA 3 - LAR04 INPUT (BURN CONDITIONS)

006	3434	185	D		320	1	10.5	7	A	35	1	869	015477														
006	3434	186	C	D	320	0	0.0	0	A	35										1							
006	3434	187	C		320	0	0.0	99	A	35											D						
006	3434	188	C		320	1	11.1	6	A	35	1	695	012975														
006	3434	189	B	C	320	0	0.0	0	A	35										1							
006	3434	190	B		320	0	0.0	99	A	35											C						
006	3434	191	B		320	1	29.5	11	A	35	1	1284	003833														
006	3434	192	B		320	1	24.3	8	A	34	1	820	004418														
006	3434	193	B		334	1	19.7	9	A	34	1	739	006758														
006	3434	194	B		334	1	33.6	15	A	33	1	1446	009519														
006	3434	195	B		334	1	16.6	8	A	32	1	427	003615														
006	3434	196	B		334	1	20.7	17	A	32	1	1191	003815														
006	3434	197	B		334	1	24.1	15	A	32	1	1124	004581														
006	3434	198	C		334	1	11.4	7	A	37	1	758	022878														
006	3434	199	C		320	1	32.2	9	A	36	1	1279	011163														
006	3434	200	D		320	1	12.2	7	A	36	1	880	009513														
006	3434	201	C	D	320	0	0.0	0	A	36										1							
006	3434	202	C		320	0	0.0	99	A	36											D						
006	3434	203	C		334	1	36.4	18	A	35	1	1845	007014														
006	3434	204	D		334	1	13.1	8	A	35	1	697	012502														
006	3434	205	D		334	1	6.6	9	A	35	1	884	013023														
006	3434	206	C	D	334	0	0.0	0	A	35										1							
006	3434	207	C		334	0	0.0	99	A	35											D						
006	3434	208	C		334	1	39.9	12	A	34	1	1295	012816														
006	3434	209	D		334	1	10.3	9	A	35	1	809	011707														
006	3434	210	D		334	1	5.2	6	A	35	1	575	015612														
006	3434	211	E		334	1	4.5	6	A	35	1	454	008222														
006	3434	212	E		334	1	3.0	7	A	35	1	676	014919														
006	3434	213	D	E	334	0	0.0	0	A	34										1							
006	3434	214	D		334	0	0.0	99	A	34											E						
006	3434	215	D		334	1	5.6	7	A	34	1	658	017232														
006	3434	216	C	D	334	0	0.0	0	A	34										1							
006	3434	217	C		334	0	0.0	99	A	34											D						
006	3434	218	C		334	1	21.6	15	A	33	1	1364	008413														
006	3434	219	D		334	1	6.4	9	A	34	1	797	011968														
006	3434	220	D		334	1	14.1	12	A	33	1	1230	016411														
006	3434	221	C	D	334	0	0.0	0	A	33										1							

AREA 3 - LAR04 INPUT (BURN CONDITIONS)

006	3434	222	C		334	0	0.0	99	A	33											D						
006	3434	223	C		334	1	35.3	21	A	33	1	1772	006488														
006	3434	224	B	C	334	0	0.0	0	A	32										1							
006	3434	225	B		334	0	0.0	99	A	32											C						
006	3434	226	B		334	1	11.5	11	A	32	1	516	001723														
006	3434	227	B		334	1	23.2	12	A	32	1	852	004396														
006	3434	228	C		334	1	7.8	12	A	32	1	876	005328														
006	3434	229	C		334	1	23.6	16	A	32	1	1228	005537														
006	3434	230	C		334	1	58.0	17	A	31	1	1154	005086														
006	3434	231	C		334	0	0.0	5	A	31	2	1615	000324														
006	3434	232	B	C	334	0	0.0	0	A	32										1							
006	3434	233	B		334	0	0.0	99	A	32											C						
006	3434	234	C		334	1	17.4	5	A	36	1	451	022146														
006	3434	235	C		334	1	37.2	12	A	35	1	1305	013026														
006	3434	236	C		324	1	11.1	9	A	35	1	728	012373														
006	3434	237	D		334	1	13.4	6	A	35	1	644	025345														
006	3434	238	D		334	1	20.9	13	A	35	1	1522	016398														
006	3434	239	C	D	324	0	0.0	0	A	35										1							
006	3434	240	C		324	0	0.0	99	A	35											D						
006	3434	241	C		324	1	28.0	12	A	34	1	920	008614														
006	3434	242	C		324	1	11.1	15	A	34	1	991	006669														
006	3434	243	D		334	1	6.9	9	A	35	1	976	021128														
006	3434	244	D		324	1	16.5	16	A	34	1	1268	011406														
006	3434	245	C	D	324	0	0.0	0	A	33										1							
006	3434	246	C		324	0	0.0	99	A	33											D						
006	3434	247	C		324	1	2.3	6	A	33	1	278	003741														
006	3434	248	D		334	1	6.3	6	A	34	1	511	018583														
006	3434	249	D		324	1	12.7	15	A	33	1	937	006685														
006	3434	250	C	D	324	0	0.0	0	A	33										1							
006	3434	251	C		324	0	0.0	99	A	33											D						
006	3434	252	C		324	1	24.0	18	A	33	1	1074	005993														
006	3434	253	C		324	1	23.1	19	A	32	1	1029	005778														
006	3434	254	C		324	0	0.0	5	A	32	2	982	000738														
006	3434	255	B	C	334	0	0.0	0	A	32										1							
006	3434	256	B		334	0	0.0	99	A	32											C						
006	3434	257	B		324	1	13.3	21	A	31	2	824	002933														
006	3434	258	B		324	1	16.8	30	A	31	2	1135	002646														

AREA 3 - LAR04 INPUT (BURN CONDITIONS)

006	3434	259	C		324	1	24.1	26	A	31	2	920	002640														
006	3434	260	C		324	1	32.3	30	A	31	2	1488	002019														
006	3434	261	B	C	324	0	0.0	0	A	31										1							
006	3434	262	B		324	0	0.0	99	A	31											C						
006	3434	263	B		334	1	32.4	17	A	31	2	941	002198														
006	3434	264	B		334	1	28.5	21	A	30	2	1030	001678														
006	3434	265	B		334	1	22.1	30	A	29	2	1135	001228														
006	3434	266	A	B	334	0	0.0	0	A	29										1							
006	3434	267	A		334	0	0.0	99	A	29											B						
006	3434	268	A		334	1	17.9	18	A	29	2	780	001503														
006	3434	269	A		334	1	11.9	25	A	28	2	802	001032														
006	3434	270	A		334	1	9.7	28	A	28	2	825	000925														
006	3434	271	B		334	1	10.1	19	A	29	2	859	001874														
006	3434	272	B		334	1	9.7	28	A	28	2	903	001251														
006	3434	273	B		334	1	6.5	30	A	28	2	906	001128														
006	3434	274	A	B	334	0	0.0	0	A	28										1							
006	3434	275	A		334	0	0.0	99	A	28											B						
006	3434	276	A		334	1	17.8	30	A	27	2	946	000816														
006	3434	277	B		334	1	18.9	10	A	31	2	511	002970														
006	3434	278	B		334	1	24.6	19	A	31	2	1102	002872														
006	3434	279	B		334	1	17.5	21	A	30	2	1029	001909														
006	3434	280	B		334	1	15.9	19	A	29	2	877	001892														
006	3434	281	B		334	1	10.2	21	A	29	2	879	001649														
006	3434	282	C		334	1	12.9	9	A	31	2	576	004679														
006	3434	283	C		334	1	32.9	17	A	30	2	991	003481														
006	3434	284	C		334	1	47.3	23	A	30	2	1210	002430														
006	3434	285	C		334	1	33.7	30	A	29	2	1332	001584														
006	3434	286	B	C	334	0	0.0	0	A	29										1							
006	3434	287	B		334	0	0.0	99	A	29											C						
006	3434	288	B		334	1	29.9	30	A	28	2	1107	001108														
006	3434	289	B		334	1	13.5	30	A	27	2	1240	001137														
006	3434	290	A	B	324	0	0.0	0	A	27										1							
006	3434	291	A		324	0	0.0	99	A	27											B						
006	3434	292	A		324	1	12.5	30	A	27	2	574	000764														
006	3434	293	B		334	1	13.7	12	A	28	2	509	001888														
006	3434	294	B		334	1	17.9	30	A	27	2	1306	001031														
006	3434	295	A	B	324	0	0.0	0	A	27										1							

AREA 3 - LAR04 INPUT (BURN CONDITIONS)

006	3434	296	A		324	0	0.0	99	A	27											B						
006	3434	297	A		324	1	21.5	30	A	26	2	953	000922														
006	3434	298	A		324	1	20.9	30	A	26	2	1287	000669														
006	3434	299	B		334	1	19.9	5	A	30	2	218	005244														
006	3434	300	B		334	1	20.8	17	A	30	2	911	002399														
006	3434	301	B		334	1	15.2	21	A	29	2	996	002184														
006	3434	302	B		334	1	23.8	23	A	29	2	1063	002137														
006	3434	303	B		334	1	33.5	30	A	28	2	1128	002022														
006	3434	304	B		334	1	29.8	30	A	27	2	1263	001375														
006	3434	305	B		324	1	16.4	30	A	27	2	1074	001102														
006	3434	306	B		324	1	9.8	30	A	26	2	1388	001052														
006	3434	307	A	B	324	0	0.0	0	A	26											1						
006	3434	308	A		324	0	0.0	99	A	26												B					
006	3434	309	B		334	1	14.2	9	A	35	1	997	019466														
006	3434	310	B		334	1	19.5	12	A	34	1	1064	006843														
006	3434	311	B		334	1	31.7	16	A	33	1	1522	008908														
006	3434	312	B		334	1	20.5	9	A	33	1	902	017495														
006	3434	313	B		334	1	19.2	17	A	32	1	1385	006604														
006	3434	314	C		334	1	6.9	7	A	33	1	688	020218														
006	3434	315	C		334	1	13.6	14	A	32	1	1422	013507														
006	3434	316	B	C	334	0	0.0	0	A	32											1						
006	3434	317	B		334	0	0.0	99	A	32												C					
006	3434	318	B		334	1	15.9	20	A	32	1	1259	003129														
006	3434	319	C		334	1	14.4	9	A	32	1	790	018095														
006	3434	320	C		334	1	27.1	16	A	32	1	1072	003479														
006	3434	321	B	C	334	0	0.0	0	A	32											1						
006	3434	322	B		334	0	0.0	99	A	32												C					
006	3434	323	B		334	1	8.5	12	A	31	1	605	002215														
006	3434	324	C		334	1	11.0	12	A	32	1	936	005764														
006	3434	325	C		334	1	9.1	11	A	31	1	726	004649														
006	3434	326	B	C	334	0	0.0	0	A	31											1						
006	3434	327	B		334	0	0.0	99	A	31												C					
006	3434	328	B		334	1	14.4	9	A	31	1	457	002623														
006	3434	329	C		334	1	8.1	7	A	32	1	469	006235														
006	3434	330	C		334	1	25.8	18	A	31	1	1150	004234														
006	3434	331	C		334	0	0.0	5	A	31	2	1048	001371														
006	3434	332	B	C	334	0	0.0	0	A	31											1						

AREA 3 - LAR04 INPUT (BURN CONDITIONS)

006	3434	333	B		334	0	0.0	99	A	31											C						
006	3434	334	C		334	1	13.5	10	A	34	1	909	009636														
006	3434	335	C		334	1	17.3	13	A	33	1	1345	012900														
006	3434	336	C		334	1	29.6	21	A	33	1	2103	010196														
006	3434	337	D		334	1	9.0	10	A	34	1	974	012440														
006	3434	338	D		334	1	11.7	10	A	33	1	924	013738														
006	3434	339	D		334	1	25.5	17	A	33	1	1753	012448														
006	3434	340	C	D	334	0	0.0	0	A	32											1						
006	3434	341	C		334	0	0.0	99	A	32												D					
006	3434	342	C		334	1	39.5	21	A	32	1	1378	003394														
006	3434	343	C		334	1	38.2	20	A	31	1	1301	003706														
006	3434	344	C		334	0	0.0	5	A	31	2	603	000233														
006	3434	345	B	C	334	0	0.0	0	A	31											1						
006	3434	346	B		334	0	0.0	99	A	31												C					
006	3434	347	B		334	1	26.0	19	A	30	2	993	002585														
006	3434	348	B		334	1	13.4	21	A	30	2	974	001629														
006	3434	349	C		334	1	15.8	17	A	30	2	895	002570														
006	3434	350	C		334	1	9.5	23	A	30	2	1119	001846														
006	3434	351	B	C	334	0	0.0	0	A	29											1						
006	3434	352	B		334	0	0.0	99	A	29												C					
006	3434	353	B		334	1	17.8	30	A	29	2	1227	002182														
006	3434	354	B		334	1	17.8	30	A	28	2	1268	001899														
006	3434	355	B		334	1	14.7	30	A	28	2	1370	001517														
006	3434	356	C		334	1	12.2	18	A	30	2	997	002874														
006	3434	357	C		334	1	24.4	19	A	29	2	941	002776														
006	3434	358	C		334	1	36.6	30	A	29	2	1274	002528														
006	3434	359	C		334	1	20.6	30	A	28	2	1345	001491														
006	3434	360	B	C	334	0	0.0	0	A	27											1						
006	3434	361	B		334	0	0.0	99	A	27												C					
006	3434	362	B		334	1	23.7	30	A	27	2	1387	001266														
006	3434	363	C		334	1	16.0	6	A	39	1	706	015983														
006	3434	364	C		334	1	24.5	8	A	38	1	830	010613														
006	3434	365	C		334	1	28.0	9	A	38	1	991	011641														
006	3434	366	C		320	1	18.7	6	A	37	1	793	011016														
006	3434	367	D		334	1	14.9	7	A	37	1	801	023217														
006	3434	368	D		334	1	27.8	10	A	37	1	1131	013862														
006	3434	369	C	D	334	0	0.0	0	A	37											1						

AREA 3 - LAR04 INPUT (BURN CONDITIONS)

006	3434	370	C		334	0	0.0	99	A	37											D						
006	3434	371	C		320	1	26.5	8	A	36	1	996	008100														
006	3434	372	C		320	1	23.6	6	A	36	1	587	003931														
006	3434	373	D		320	1	9.2	6	A	36	1	996	023413														
006	3434	374	C	D	320	0	0.0	0	A	36										1							
006	3434	375	C		320	0	0.0	99	A	36											D						
006	3434	376	C		320	1	31.4	10	A	35	1	1257	005884														
006	3434	377	C		334	1	18.6	11	A	35	1	858	005810														
006	3434	378	D		334	1	17.5	7	A	36	1	794	017368														
006	3434	379	D		334	1	25.7	11	A	35	1	1184	013713														
006	3434	380	C	D	334	0	0.0	0	A	35										1							
006	3434	381	C		334	0	0.0	99	A	35											D						
006	3434	382	C		334	1	33.6	12	A	35	1	1110	005774														
006	3434	383	C		334	1	44.7	15	A	34	1	1444	007679														
006	3434	384	D		334	1	14.0	10	A	34	1	1123	025901														
006	3434	385	C	D	334	0	0.0	0	A	34										1							
006	3434	386	C		334	0	0.0	99	A	34											D						
006	3434	387	C		334	1	30.9	17	A	34	1	1502	005408														
006	3434	388	D		334	1	7.7	5	A	34	1	477	025874														
006	3434	389	D		334	1	18.0	11	A	34	1	1098	017341														
006	3434	390	C	D	334	0	0.0	0	A	33										1							
006	3434	391	C		334	0	0.0	99	A	33											D						
006	3434	392	C		334	1	15.8	13	A	33	1	933	003418														
006	3434	393	C		334	1	15.4	18	A	32	1	1087	002409														
006	3434	394	C		334	1	13.9	14	A	31	1	788	002597														
006	3434	395	C		334	1	13.4	18	A	31	1	1027	002533														
006	3434	396	D		334	1	14.5	9	A	33	1	821	017430														
006	3434	397	D		334	1	13.8	11	A	32	1	822	005834														
006	3434	398	D		334	1	7.0	21	A	31	1	1261	002826														
006	3434	399	C	D	334	0	0.0	0	A	31										1							
006	3434	400	C		334	0	0.0	99	A	31											D						
006	3434	401	D		334	1	4.1	6	A	32	1	519	019214														
006	3434	402	D		334	1	14.7	19	A	31	1	1283	004474														
006	3434	403	C	D	334	0	0.0	0	A	31										1							
006	3434	404	C		334	0	0.0	99	A	31											D						
006	3434	405	C		334	1	12.4	11	A	31	1	617	002937														
006	3434	406	C		334	1	6.2	16	A	30	1	834	002318														

006	3434	407	C		334	1	9.5	5	A	30	1	230	003829														
006	3434	408	C		334	1	17.7	12	A	30	1	672	002723														
006	3434	409	D		334	1	7.4	5	A	33	1	442	030093														
006	3434	410	D		334	1	7.3	8	A	33	1	646	012404														
006	3434	411	E		334	1	8.4	7	A	33	1	686	019352														
006	3434	412	D	E	334	0	0.0	0	A	33											1						
006	3434	413	D		334	0	0.0	99	A	33												E					
006	3434	414	D		334	1	14.6	10	A	33	1	742	007094														
006	3434	415	D		334	1	7.7	9	A	32	1	653	005924														
006	3434	416	E		334	1	5.1	6	A	33	1	420	009460														
006	3434	417	E		334	1	11.8	14	A	32	1	1064	005809														
006	3434	418	D	E	334	0	0.0	0	A	32											1						
006	3434	419	D		334	0	0.0	99	A	32												E					
006	3434	420	D		334	1	14.9	12	A	31	1	697	003696														
006	3434	421	D		334	1	7.1	12	A	31	1	676	003076														
006	3434	422	D		334	1	2.4	21	A	30	1	1159	002628														
006	3434	423	C	D	334	0	0.0	0	A	30											1						
006	3434	424	C		334	0	0.0	99	A	30												D					
006	3434	425	D		334	1	13.2	6	A	36	1	724	026664														
006	3434	426	D		334	1	20.3	11	A	36	1	1265	014746														
006	3434	427	E		334	1	7.0	5	A	36	1	589	029640														
006	3434	428	E		334	1	7.1	10	A	36	1	1139	017017														
006	3434	429	D	E	334	0	0.0	0	A	35											1						
006	3434	430	D		334	0	0.0	99	A	35												E					
006	3434	431	E		334	1	15.0	11	A	36	1	1399	018787														
006	3434	432	D	E	334	0	0.0	0	A	35											1						
006	3434	433	D		334	0	0.0	99	A	35												E					
006	3434	434	E		334	1	7.6	8	A	35	1	762	015728														
006	3434	435	D	E	334	0	0.0	0	A	35											1						
006	3434	436	D		334	0	0.0	99	A	35												E					
006	3434	437	D		334	1	17.1	12	A	35	1	1179	011395														
006	3434	438	E		334	1	9.3	8	A	35	1	910	025870														
006	3434	439	D	E	334	0	0.0	0	A	34											1						
006	3434	440	D		334	0	0.0	99	A	34												E					
006	3434	441	D		334	1	19.0	10	A	34	1	931	012445														
006	3434	442	E		334	1	7.4	5	A	35	1	380	023158														
006	3434	443	E		334	1	25.8	10	A	35	1	1057	015041														

AREA 3 - LAR04 INPUT (BURN CONDITIONS)

006	3434	444	E		334	1	27.2	14	A	34	1	1518	011247														
006	3434	445	D	E	334	0	0.0	0	A	33											1						
006	3434	446	D		334	0	0.0	99	A	33												E					
006	3434	447	D		334	1	38.3	17	A	33	1	1436	005735														
006	3434	448	E		334	1	10.9	11	A	33	1	1086	019712														
006	3434	449	D	E	334	0	0.0	0	A	33											1						
006	3434	450	D		334	0	0.0	99	A	33												E					
006	3434	451	D		334	1	18.0	13	A	33	1	949	003937														
006	3434	452	D		334	1	10.9	14	A	32	1	999	004261														
006	3434	453	D		334	1	18.7	13	A	31	1	935	005235														
006	3434	454	D		334	1	20.7	11	A	31	1	682	003769														
006	3434	455	D		334	1	19.5	17	A	30	1	943	002963														
006	3434	456	C	D	334	0	0.0	0	A	30											1						
006	3434	457	C		334	0	0.0	99	A	30												D					
006	3434	458	C		334	1	12.7	21	A	29	2	841	001261														
006	3434	459	C		334	1	9.4	17	A	29	2	832	002404														
006	3434	460	D		334	1	5.6	11	A	30	2	526	002162														
006	3434	461	D		334	1	8.6	24	A	29	2	1042	001822														
006	3434	462	C	D	334	0	0.0	0	A	29											1						
006	3434	463	C		334	0	0.0	99	A	29												D					
006	3434	464	C		334	1	10.5	16	A	29	2	781	002284														
006	3434	465	C		334	1	9.8	30	A	28	2	1159	001739														
006	3434	466	D		334	1	12.3	7	A	30	2	325	002436														
006	3434	467	D		334	1	22.5	21	A	29	2	963	002111														
006	3434	468	D		334	1	22.2	21	A	29	2	944	002024														
006	3434	469	D		334	1	9.8	30	A	28	2	1009	001614														
006	3434	470	C	D	334	0	0.0	0	A	28											1						
006	3434	471	C		334	0	0.0	99	A	28												D					
006	3434	472	C		334	1	23.0	30	A	28	2	1203	001786														
006	3434	473	C		334	1	17.8	30	A	27	2	1063	001754														
006	3434	474	C		334	1	12.3	30	A	27	2	1110	001314														
006	3434	475	B	C	334	0	0.0	0	A	27											1						
006	3434	476	B		334	0	0.0	99	A	27												C					
006	3434	477	B		324	1	43.0	30	A	26	2	1339	001081														
006	3434	478	B		324	1	24.2	30	A	26	2	1359	001162														
006	3434	479	A	B	324	0	0.0	0	A	26											1						
006	3434	480	A		324	0	0.0	99	A	26												B					

AREA 3 - LAR04 INPUT (BURN CONDITIONS)

006	3434	481	A		324	1	43.7	30	A	25	2	1025	000931														
006	3434	482	A		324	1	31.5	30	A	25	2	1379	000760														
006	3434	483	A		334	1	11.2	30	A	24	2	1218	000668														
006	3434	484	B		334	1	8.9	17	A	28	2	706	001905														
006	3434	485	B		334	1	18.0	30	A	27	2	1294	001639														
006	3434	486	B		334	1	27.4	30	A	27	2	1188	001414														
006	3434	487	B		324	1	32.7	30	A	26	2	1162	001080														
006	3434	488	B		324	1	40.8	30	A	25	2	1180	001273														
006	3434	489	B		324	1	26.7	30	A	25	2	1022	001145														
006	3434	490	B		334	1	12.2	30	A	24	2	1125	000824														
006	3434	491	B		334	1	7.0	30	A	24	2	1258	000628														
006	3434	492	A	B	334	0	0.0	0	A	23											1						
006	3434	493	A		334	0	0.0	99	A	23												B					
006	3434	494	B		334	1	7.7	30	A	25	2	746	001012														
006	3434	495	B		334	1	13.2	30	A	24	2	1091	000881														
006	3434	496	B		334	1	16.9	30	A	24	2	1125	000719														
006	3434	497	A	B	334	0	0.0	0	A	23											1						
006	3434	498	A		334	0	0.0	99	A	23												B					
006	3434	499	A		334	1	4.263	30	A	23	2	897	000387														
006	3434	500	B		334	1	11.85	30	A	24	2	918	000913														
006	3434	501	B		334	1	16.92	30	A	24	2	938	000804														
006	3434	502	B		334	1	1.87	23	A	23	2	344	000622														
006	3434	503	A	B	334			0	A	23		0									1						
006	3434	504	A		334			99	A	23		0										B					
006	3434	505	A		334	1	6.479	30	A	23	2	1046	000395														
006	3434	506	B		334	1	14.02	30	A	24	2	878	000787														
006	3434	507	B		334	1	10.72	30	A	23	2	1013	000544														
006	3434	508	A	B	334			0	A	23		0									1						
006	3434	509	A		334			99	A	23		0										B					
006	3434	510	A		334	1	23.66	30	A	22	2	947	000661														
006	3434	511	A		334	1	15.84	30	A	22	2	688	000955														
006	3434	512	A		334	1	18.2	30	A	22	2	1134	000730														
006	3434	513	A		334	1	11.49	30	A	21	2	1217	000440														
006	3434	514	B		334	1	10.06	30	A	25	2	1517	001180														
006	3434	515	B		334	1	14.87	30	A	24	2	1221	000830														
006	3434	516	B		334	1	16.7	30	A	24	2	1182	000720														
006	3434	517	B		334	1	9.564	30	A	23	2	1043	000569														

AREA 3 - LAR04 INPUT (BURN CONDITIONS)

006	3434	518	B		334	1	18.23	30	A	23	2	631	000569														
006	3434	519	B		334	1	28.76	30	A	22	2	665	000454														
006	3434	520	B		334	1	20.4	30	A	22	2	640	000436														
006	3434	521	B		334	1	22.76	30	A	22	2	983	000817														
006	3434	522	B		334	1	15.88	30	A	21	2	881	000668														
006	3434	523	B		334	1	11.92	30	A	21	2	1311	000408														
006	3434	524	A	B	334			0	A	21		0									1						
006	3434	525	A		334			99	A	21		0										B					
006	3434	526	A		334	1	6.847	30	A	21	2	1360	000719														
006	3434	527	A		334			99	A	21		0								1			2				

AREA 4 - LAR04 INPUT (NON-BURN CONDITIONS)

COD	JOB	LOC	P	S	SOI	IMP	AREA	TC	Z	RA	C	LENGT	SLOPE	Z	PIPE	Q	P	H	C	Z	H	H	R	BTN	SDN	DP	VE
006	3434	1	A		124	1	40.4	30	A	31	2	978	002722									1					
006	3434	2	A		124	1	46.5	30	A	30	2	1146	002486														
006	3434	3	A		124	1	43.9	30	A	30	2	1308	001832														
006	3434	4	A		134	1	35.9	30	A	29	2	1211	001524														
006	3434	5	A		134	1	39.0	30	A	28	2	1265	001223														
006	3434	6	A		134	1	37.7	30	A	28	2	1415	000984														
006	3434	7	A		134	1	27.6	30	A	27	2	1208	001172														
006	3434	8	A		134	1	26.8	30	A	26	2	1214	001151														
006	3434	9	A		134	1	26.4	30	A	25	2	1060	001002														
006	3434	10	A		134	1	26.8	30	A	24	2	1094	001221														
006	3434	11	A		134	1	23.6	30	A	24	2	803	000980														
006	3434	12	A		134	1	32.1	30	A	23	2	1128	000849														
006	3434	13	B		134	1	11.1	19	A	29	2	785	001433														
006	3434	14	B		134	1	16.5	19	A	29	2	858	001707														
006	3434	15	B		134	1	32.6	30	A	29	2	1355	001217														
006	3434	16	B		134	1	42.8	30	A	28	2	1356	001136														
006	3434	17	B		134	1	44.3	30	A	27	2	1259	000906														
006	3434	18	B		134	1	44.8	30	A	26	2	1163	001173														
006	3434	19	B		134	1	48.5	30	A	26	2	1302	000931														
006	3434	20	B		134	1	31.3	30	A	25	2	1118	001118														
006	3434	21	B		134	1	14.8	30	A	24	2	1152	000719														
006	3434	22	B		134	1	13.6	30	A	23	2	1203	000685														
006	3434	23	A	B	134	0	0.0	0	A	23										1							
006	3434	24	A		134	0	0.0	99	A	23											B						
006	3434	25	A		134	1	33.3	99	A	23	2	1295	000710														
006	3434	26	A		134	1	26.2	99	A	22	2	856	001020														
006	3434	27	A		134	1	35.3	99	A	22	2	969	000770														
006	3434	28	A		134	1	31.5	99	A	21	2	921	000500														
006	3434	29	A		134	1	25.6	99	A	21	2	1200	000810														
006	3434	30	A		134	0	0.0	99	A	21									1			2					

AREA 4 - LAR04 INPUT (BURN CONDITIONS)

COD	JOB	LOC	P	S	SOI	IMP	AREA	TC	Z	RA	C	LENGT	SLOPE	Z	PIPE	Q	P	H	C	Z	H	H	R	BTN	SDN	DP	VE
006	3434	1	A		324	1	40.4	30	A	31	2	978	002722									1					
006	3434	2	A		324	1	46.5	30	A	30	2	1146	002486														
006	3434	3	A		324	1	43.9	30	A	30	2	1308	001832														
006	3434	4	A		334	1	35.9	30	A	29	2	1211	001524														
006	3434	5	A		334	1	39.0	30	A	28	2	1265	001223														
006	3434	6	A		334	1	37.7	30	A	28	2	1415	000984														
006	3434	7	A		334	1	27.6	30	A	27	2	1208	001172														
006	3434	8	A		334	1	26.8	30	A	26	2	1214	001151														
006	3434	9	A		334	1	26.4	30	A	25	2	1060	001002														
006	3434	10	A		334	1	26.8	30	A	24	2	1094	001221														
006	3434	11	A		334	1	23.6	30	A	24	2	803	000980														
006	3434	12	A		334	1	32.1	30	A	23	2	1128	000849														
006	3434	13	B		334	1	11.1	19	A	29	2	785	001433														
006	3434	14	B		334	1	16.5	19	A	29	2	858	001707														
006	3434	15	B		334	1	32.6	30	A	29	2	1355	001217														
006	3434	16	B		334	1	42.8	30	A	28	2	1356	001136														
006	3434	17	B		334	1	44.3	30	A	27	2	1259	000906														
006	3434	18	B		334	1	44.8	30	A	26	2	1163	001173														
006	3434	19	B		334	1	48.5	30	A	26	2	1302	000931														
006	3434	20	B		334	1	31.3	30	A	25	2	1118	001118														
006	3434	21	B		334	1	14.8	30	A	24	2	1152	000719														
006	3434	22	B		334	1	13.6	30	A	23	2	1203	000685														
006	3434	23	A	B	334	0	0.0	0	A	23										1							
006	3434	24	A		334	0	0.0	99	A	23											B						
006	3434	25	A		334	1	33.3	99	A	23	2	1295	000710														
006	3434	26	A		334	1	26.2	99	A	22	2	856	001020														
006	3434	27	A		334	1	35.3	99	A	22	2	969	000770														
006	3434	28	A		334	1	31.5	99	A	21	2	921	000500														
006	3434	29	A		334	1	25.6	99	A	21	2	1200	000810														
006	3434	30	A		334	0	0.0	99	A	21									1			2					

AREA 5 - LAR04 INPUT (NON-BURN CONDITIONS)

COD	JOB	LOC	P	S	SOI	IMP	AREA	TC	Z	RA	C	LENGT	SLOPE	Z	PIPE	Q	P	H	C	Z	H	H	R	BTN	SDN	DP	VE
006	3434	1	A		124	1	28.3	30	A	30	2	1026	002625									1					
006	3434	2	A		124	1	33.0	30	A	30	2	1349	002157														
006	3434	3	A		124	1	26.6	30	A	29	2	1123	001722														
006	3434	4	A		134	1	30.9	30	A	29	2	1227	001653														
006	3434	5	A		134	1	30.3	30	A	28	2	1212	001549														
006	3434	6	A		134	1	31.3	30	A	27	2	1174	001167														
006	3434	7	A		134	1	32.9	30	A	26	2	1270	001090														
006	3434	8	A		134	1	30.9	30	A	26	2	1151	001200														
006	3434	9	A		134	1	26.8	30	A	25	2	1078	000961														
006	3434	10	A		134	1	26.0	30	A	24	2	1159	001115														
006	3434	11	A		134	1	14.3	30	A	24	2	979	000999														
006	3434	12	A		134	1	5.1	30	A	23	2	931	001063														
006	3434	13	B		134	1	10.0	9	A	30	2	385	002052														
006	3434	14	B		134	1	16.4	22	A	29	2	1006	001874														
006	3434	15	B		134	1	25.7	30	A	28	2	1167	001925														
006	3434	16	B		134	1	25.5	30	A	28	2	1180	001460														
006	3434	17	B		134	1	23.4	30	A	27	2	1214	001195														
006	3434	18	B		134	1	24.5	30	A	26	2	1166	001161														
006	3434	19	B		134	1	21.8	30	A	25	2	1151	001287														
006	3434	20	B		134	1	18.6	30	A	25	2	1025	000996														
006	3434	21	B		134	1	23.2	30	A	24	2	1144	001096														
006	3434	22	B		134	1	18.4	30	A	23	2	854	001170														
006	3434	23	B		134	1	22.2	30	A	23	2	806	001314														
006	3434	24	A	B	134	0	0.0	0	A	23										1							
006	3434	25	A		134	0	0.0	99	A	23											B						
006	3434	26	A		134	1	13.81	24	A	29	2	823	000807														
006	3434	27	A		134	1	15.98	20	A	28	2	749	001284														
006	3434	28	A		134	1	10.08	18	A	28	2	611	000869														
006	3434	29	A		134	1	15.13	30	A	27	2	1614	000513														
006	3434	30	B		134	1	10.05	30	A	26	2	2097	001240														
006	3434	31	B		134	1	21.21	30	A	25	2	1538	001192														
006	3434	32	B		134	1	22.56	30	A	25	2	1248	001173														
006	3434	33	B		134	1	26.27	30	A	24	2	1402	001292														
006	3434	34	B		134	1	17.92	30	A	23	2	926	001151														
006	3434	35	B		134	1	12.94	30	A	23	2	724	000682														
006	3434	36	B		134	1	15.33	30	A	23	2	1164	000641														

AREA 5 - LAR04 INPUT (NON-BURN CONDITIONS)

006	3434	37	A	B	134			0	A	23										1							
006	3434	38	A		134			99	A	23											B						
006	3434	39	A		134	1	21.53	30	A	23	2	1448	000705														
006	3434	40	A		134	1	17.36	30	A	23	2	1056	000382														
006	3434	41	A		134			99	A	23									1			2					

AREA 5 - LAR04 INPUT (BURN CONDITIONS)

COD	JOB	LOC	P	S	SOI	IMP	AREA	TC	Z	RA	C	LENGT	SLOPE	Z	PIPE	Q	P	H	C	Z	H	H	R	BTN	SDN	DP	VE
006	3434	1	A		324	1	28.3	30	A	30	2	1026	002625									1					
006	3434	2	A		324	1	33.0	30	A	30	2	1349	002157														
006	3434	3	A		324	1	26.6	30	A	29	2	1123	001722														
006	3434	4	A		334	1	30.9	30	A	29	2	1227	001653														
006	3434	5	A		334	1	30.3	30	A	28	2	1212	001549														
006	3434	6	A		334	1	31.3	30	A	27	2	1174	001167														
006	3434	7	A		334	1	32.9	30	A	26	2	1270	001090														
006	3434	8	A		334	1	30.9	30	A	26	2	1151	001200														
006	3434	9	A		334	1	26.8	30	A	25	2	1078	000961														
006	3434	10	A		334	1	26.0	30	A	24	2	1159	001115														
006	3434	11	A		334	1	14.3	30	A	24	2	979	000999														
006	3434	12	A		334	1	5.1	30	A	23	2	931	001063														
006	3434	13	B		324	1	10.0	9	A	30	2	385	002052														
006	3434	14	B		324	1	16.4	22	A	29	2	1006	001874														
006	3434	15	B		334	1	25.7	30	A	28	2	1167	001925														
006	3434	16	B		334	1	25.5	30	A	28	2	1180	001460														
006	3434	17	B		334	1	23.4	30	A	27	2	1214	001195														
006	3434	18	B		334	1	24.5	30	A	26	2	1166	001161														
006	3434	19	B		334	1	21.8	30	A	25	2	1151	001287														
006	3434	20	B		334	1	18.6	30	A	25	2	1025	000996														
006	3434	21	B		334	1	23.2	30	A	24	2	1144	001096														
006	3434	22	B		334	1	18.4	30	A	23	2	854	001170														
006	3434	23	B		334	1	22.2	30	A	23	2	806	001314														
006	3434	24	A	B	334	0	0.0	0	A	23										1							
006	3434	25	A		334	0	0.0	99	A	23											B						
006	3434	26	A		334	1	13.81	24	A	29	2	823	000807														
006	3434	27	A		334	1	15.98	20	A	28	2	749	001284														
006	3434	28	A		334	1	10.08	18	A	28	2	611	000869														
006	3434	29	A		334	1	15.13	30	A	27	2	1614	000513														
006	3434	30	B		334	1	10.05	30	A	26	2	2097	001240														
006	3434	31	B		334	1	21.21	30	A	25	2	1538	001192														
006	3434	32	B		334	1	22.56	30	A	25	2	1248	001173														
006	3434	33	B		334	1	26.27	30	A	24	2	1402	001292														
006	3434	34	B		334	1	17.92	30	A	23	2	926	001151														
006	3434	35	B		334	1	12.94	30	A	23	2	724	000682														
006	3434	36	B		334	1	15.33	30	A	23	2	1164	000641														

AREA 5 - LAR04 INPUT (BURN CONDITIONS)

006	3434	37	A	B	334			0	A	23										1							
006	3434	38	A		334			99	A	23											B						
006	3434	39	A		334	1	21.53	30	A	23	2	1448	000705														
006	3434	40	A		334	1	17.36	30	A	23	2	1056	000382														
006	3434	41	A		334			99	A	23									1			2					

AREA 6 - LAR04 INPUT (NON-BURN CONDITIONS)

COD	JOB	LOC	P	S	SOI	IMP	AREA	TC	Z	RA	C	LENGT	SLOPE	Z	PIPE	Q	P	H	C	Z	H	H	R	BTN	SDN	DP	VE
006	3434	1	A		124	1	19.33	30	A	30	2	1438	002376									1					
006	3434	2	A		124	1	21.24	30	A	29	2	1256	002089														
006	3434	3	A		124	1	23.85	30	A	29	2	1129	001946														
006	3434	4	A		134	1	29.12	30	A	28	2	1119	001652														
006	3434	5	A		134	1	35.33	30	A	27	2	1174	001445														
006	3434	6	A		134	1	48.37	30	A	26	2	1421	001251														
006	3434	7	A		134	1	44.3	30	A	25	2	1501	001165														
006	3434	8	A		134	1	27.49	30	A	24	2	1517	001319														
006	3434	9	A		134	1	14.45	30	A	24	2	1086	001219														
006	3434	10	A		134	1	14.61	30	A	23	2	1740	001180														
006	3434	11	B		134	1	20.57	30	A	26	2	3146	001267														
006	3434	12	B		134	1	18	30	A	25	2	1107	001365														
006	3434	13	B		134	1	31.2	30	A	24	2	1180	001653														
006	3434	14	B		134	1	32.84	30	A	24	2	1091	001167														
006	3434	15	B		134	1	30.96	30	A	23	2	1031	001331														
006	3434	16	B		134	1	20.54	30	A	23	2	614	001079														
006	3434	17	A	B	134			0	A	23										1							
006	3434	18	A		134			99	A	23											B						
006	3434	19	A		134	1	46.51	30	A	22	2	1339	001015														
006	3434	20	A		134	1	49.64	30	A	21	2	932	000836														
006	3434	21	A		134	1	39.12	30	A	21	2	701	001171														
006	3434	22	A		134	1	22.69	30	A	21	2	684	000593														
006	3434	23	A		134	1	20.14	30	A	21	2	1174	000358														
006	3434	24	A		134			99	A	21									1			2					

AREA 6 - LAR04 INPUT (BURN CONDITIONS)

COD	JOB	LOC	P	S	SOI	IMP	AREA	TC	Z	RA	C	LENGT	SLOPE	Z	PIPE	Q	P	H	C	Z	H	H	R	BTN	SDN	DP	VE
006	3434	1	A		324	1	19.33	30	A	30	2	1438	002376									1					
006	3434	2	A		324	1	21.24	30	A	29	2	1256	002089														
006	3434	3	A		324	1	23.85	30	A	29	2	1129	001946														
006	3434	4	A		334	1	29.12	30	A	28	2	1119	001652														
006	3434	5	A		334	1	35.33	30	A	27	2	1174	001445														
006	3434	6	A		334	1	48.37	30	A	26	2	1421	001251														
006	3434	7	A		334	1	44.3	30	A	25	2	1501	001165														
006	3434	8	A		334	1	27.49	30	A	24	2	1517	001319														
006	3434	9	A		334	1	14.45	30	A	24	2	1086	001219														
006	3434	10	A		334	1	14.61	30	A	23	2	1740	001180														
006	3434	11	B		334	1	20.57	30	A	26	2	3146	001267														
006	3434	12	B		334	1	18	30	A	25	2	1107	001365														
006	3434	13	B		334	1	31.2	30	A	24	2	1180	001653														
006	3434	14	B		334	1	32.84	30	A	24	2	1091	001167														
006	3434	15	B		334	1	30.96	30	A	23	2	1031	001331														
006	3434	16	B		334	1	20.54	30	A	23	2	614	001079														
006	3434	17	A	B	334			0	A	23										1							
006	3434	18	A		334			99	A	23											B						
006	3434	19	A		334	1	46.51	30	A	22	2	1339	001015														
006	3434	20	A		334	1	49.64	30	A	21	2	932	000836														
006	3434	21	A		334	1	39.12	30	A	21	2	701	001171														
006	3434	22	A		334	1	22.69	30	A	21	2	684	000593														
006	3434	23	A		334	1	20.14	30	A	21	2	1174	000358														
006	3434	24	A		334			99	A	21									1			2					

AREA 7 - LAR04 INPUT (NON-BURN CONDITIONS)

COD	JOB	LOC	P	S	SOI	IMP	AREA	TC	Z	RA	C	LENGT	SLOPE	Z	PIPE	Q	P	H	C	Z	H	H	R	BTN	SDN	DP	VE
006	3434	1	A		124	1	8.553	11	A	37	1	1121	018951									1					
006	3434	2	A		124	1	38.08	23	A	36	1	1807	008048														
006	3434	3	A		124	1	34.63	28	A	35	1	1660	005056														
006	3434	4	A		124	1	9.546	29	A	35	2	1542	003738														
006	3434	5	A		124	1	21.71	26	A	34	2	1348	003985														
006	3434	6	A		124	1	24.19	21	A	33	2	1056	003752														
006	3434	7	A		124	1	25.33	18	A	32	2	858	003256														
006	3434	8	A		124	1	34.41	17	A	31	2	804	004053														
006	3434	9	A		124	1	40.56	19	A	30	2	762	003231														
006	3434	10	A		124	1	45.72	17	A	30	2	639	002808														
006	3434	11	A		124	1	32.05	30	A	30	2	1693	002336														
006	3434	12	A		124	1	28.66	30	A	29	2	1190	001821														
006	3434	13	A		124	1	29.08	30	A	28	2	1045	002011														
006	3434	14	A		134	1	30.8	30	A	28	2	1181	001704														
006	3434	15	A		134	1	26.49	30	A	27	2	995	001519														
006	3434	16	A		134	1	31.98	30	A	26	2	1093	001173														
006	3434	17	A		134	1	33.87	30	A	26	2	1035	001109														
006	3434	18	A		134	1	37.24	30	A	25	2	1085	001538														
006	3434	19	A		134	1	39.12	30	A	24	2	1124	001669														
006	3434	20	A		134	1	40.41	30	A	23	2	1074	001436														
006	3434	21	A		134	1	39.95	30	A	23	2	1058	001254														
006	3434	22	A		134	1	34.03	30	A	22	2	1083	001133														
006	3434	23	B		134	1	10.28	30	A	28	2	2335	001830														
006	3434	24	B		134	1	25.28	30	A	27	2	2078	001459														
006	3434	25	B		134	1	13.87	30	A	25	2	881	001244														
006	3434	26	B		134	1	21.56	30	A	25	2	1052	001465														
006	3434	27	B		134	1	29.72	30	A	24	2	1149	001488														
006	3434	28	B		134	1	31.5	30	A	23	2	1228	001191														
006	3434	29	B		134	1	24.63	30	A	23	2	1058	001372														
006	3434	30	B		134	1	24.94	30	A	22	2	1146	001126														
006	3434	31	A	B	134			0	A	22		0								1							
006	3434	32	A		134			99	A	22		0									B						
006	3434	33	A		134	1	37.79	30	A	21	2	852	000912														
006	3434	34	A		134	1	36.12	30	A	21	2	744	001224														
006	3434	35	A		134	1	29.6	30	A	21	2	711	000837														
006	3434	36	A		134	1	20.08	30	A	21	2	501	000502														

AREA 7 - LAR04 INPUT (NON-BURN CONDITIONS)

006	3434	37	A		134			99	A	21		0							1			2					

AREA 7 - LAR04 INPUT (BURN CONDITIONS)

COD	JOB	LOC	P	S	SOI	IMP	AREA	TC	Z	RA	C	LENGT	SLOPE	Z	PIPE	Q	P	H	C	Z	H	H	R	BTN	SDN	DP	VE
006	3434	1	A		324	1	8.553	11	A	37	1	1121	018951									1					
006	3434	2	A		324	1	38.08	23	A	36	1	1807	008048														
006	3434	3	A		324	1	34.63	28	A	35	1	1660	005056														
006	3434	4	A		324	1	9.546	29	A	35	2	1542	003738														
006	3434	5	A		324	1	21.71	26	A	34	2	1348	003985														
006	3434	6	A		324	1	24.19	21	A	33	2	1056	003752														
006	3434	7	A		324	1	25.33	18	A	32	2	858	003256														
006	3434	8	A		324	1	34.41	17	A	31	2	804	004053														
006	3434	9	A		324	1	40.56	19	A	30	2	762	003231														
006	3434	10	A		324	1	45.72	17	A	30	2	639	002808														
006	3434	11	A		324	1	32.05	30	A	30	2	1693	002336														
006	3434	12	A		324	1	28.66	30	A	29	2	1190	001821														
006	3434	13	A		324	1	29.08	30	A	28	2	1045	002011														
006	3434	14	A		334	1	30.8	30	A	28	2	1181	001704														
006	3434	15	A		334	1	26.49	30	A	27	2	995	001519														
006	3434	16	A		334	1	31.98	30	A	26	2	1093	001173														
006	3434	17	A		334	1	33.87	30	A	26	2	1035	001109														
006	3434	18	A		334	1	37.24	30	A	25	2	1085	001538														
006	3434	19	A		334	1	39.12	30	A	24	2	1124	001669														
006	3434	20	A		334	1	40.41	30	A	23	2	1074	001436														
006	3434	21	A		334	1	39.95	30	A	23	2	1058	001254														
006	3434	22	A		334	1	34.03	30	A	22	2	1083	001133														
006	3434	23	B		324	1	10.28	30	A	28	2	2335	001830														
006	3434	24	B		334	1	25.28	30	A	27	2	2078	001459														
006	3434	25	B		334	1	13.87	30	A	25	2	881	001244														
006	3434	26	B		334	1	21.56	30	A	25	2	1052	001465														
006	3434	27	B		334	1	29.72	30	A	24	2	1149	001488														
006	3434	28	B		334	1	31.5	30	A	23	2	1228	001191														
006	3434	29	B		334	1	24.63	30	A	23	2	1058	001372														
006	3434	30	B		334	1	24.94	30	A	22	2	1146	001126														
006	3434	31	A	B	334			0	A	22		0								1							
006	3434	32	A		334			99	A	22		0									B						
006	3434	33	A		334	1	37.79	30	A	21	2	852	000912														
006	3434	34	A		334	1	36.12	30	A	21	2	744	001224														
006	3434	35	A		334	1	29.6	30	A	21	2	711	000837														
006	3434	36	A		334	1	20.08	30	A	21	2	501	000502														

AREA 7 - LAR04 INPUT (BURN CONDITIONS)

006	3434	37	A		334			99	A	21		0							1			2					

ATTACHMENT 3

Existing Conditions
LAR04 Calculations
(Non-Burn Conditions)

Program Package Serial Number: 2173

04/16/10 FILE: AREA1 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
3434	1A	7.7	.90	7.7	.90	2	1486.	.00658	.00	.00	0.	134	30	A21	.01
3434	2A	26.0	3.02	33.7	3.41	2	1087.	.00472	.00	.00	0.	134	30	A21	.01
3434	3A	26.7	3.10	60.4	5.58	2	1193.	.00498	.00	.00	0.	134	30	A21	.01
3434	4A	28.2	3.28	88.6	7.27	2	1000.	.00379	.00	.00	0.	134	30	A21	.01
3434	5A	45.0	5.23	133.6	10.38	2	1157.	.00482	.00	.00	0.	134	30	A21	.01
3434	6A	46.5	5.41	180.1	13.62	2	857.	.00740	.00	.00	0.	134	30	A21	.01
3434	7A	57.4	6.67	237.5	18.44	2	875.	.00728	.00	.00	0.	134	30	A21	.01
3434	8A	51.1	5.94	288.6	22.64	2	828.	.00444	.00	.00	0.	134	30	A21	.01
3434	9A	38.4	4.46	327.0	25.09	2	889.	.00437	.00	.00	0.	134	30	A21	.01
3434	10A	25.6	2.98	352.6	25.41	2	679.	.00391	.00	.00	0.	134	30	A21	.01
3434	11A	.0	.00	352.6	25.20	0	0.	.00000	.00	.00	0.	134	99	A21	.01

Program Package Serial Number: 2173

04/16/10 FILE: AREA1A INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
3434	1A	13.4	1.56	13.4	1.56	2	1347.	.00807	.00	.00	0.	134	30	A21	.01
3434	2A	.0	.00	13.4	1.35	0	0.	.00000	.00	.00	0.	134	99	A21	.00

Program Package Serial Number: 2173

04/16/10 FILE: AREA1B INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
3434	1A	8.7	1.06	8.7	1.06	2	927.	.00604	.00	.00	0.	134	30	A22	.01
3434	2A	15.9	1.94	24.6	2.63	2	908.	.00579	.00	.00	0.	134	30	A22	.01
3434	3A	10.6	1.29	35.2	3.44	2	660.	.00860	.00	.00	0.	134	30	A22	.01
3434	4A	.0	.00	35.2	3.37	0	0.	.00000	.00	.00	0.	134	99	A22	.00

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 Program Package Serial Number:  2173
04/19/10   FILE: AREA2    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     1
                                        LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                      PROG F0601M

     Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                  STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
     LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     3434    1A    13.9      38.42      13.9     38.42   1     408.   .16339      .00   .00        0.  134   5   A39   .01
     3434    2A    13.0      19.15      26.9     53.79   1    1284.   .14000      .00   .00        0.  134  11   A38   .01
     3434    3B    15.8      43.67      15.8     43.67   1     537.   .16873      .00   .00        0.  134   5   A39   .01
     3434    4B    24.3      35.80      40.1     74.02   1    1362.   .11857      .00   .00        0.  134  11   A38   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434    5A  TA 1158 QA    45.28 QAB   108.79 QB    63.51    3434    5B  TB 1158 QB    63.51 QBA   108.79 QA    45.28   *
*                                3434    5AB TAB 1158 QAB   108.79 QA    45.28 QB    63.51                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
     LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     3434    5AB   40.1      63.51      67.0    108.79   0       0.   .00000      .00   .00        0.  120   0   A38   .00
     3434    6A     .0        .00      67.0    108.79   0       0.   .00000      .00   .00        0.  120  99   A38   .00
     3434    7B    7.1      19.62       7.1     19.62   1     554.   .16719      .00   .00        0.  134   5   A39   .01
     3434    8B   14.2      38.20      21.3     54.53   1    1079.   .16394      .00   .00        0.  120   7   A38   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434    9A  TA 1158 QA   108.79 QAB   157.04 QB    48.25    3434    9B  TB 1157 QB    49.78 QBA   152.29 QA   102.51   *
*                                3434    9AB TAB 1158 QAB   157.04 QA   108.79 QB    48.25                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
     LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     3434    9AB   21.3      49.78      88.3    157.04   0       0.   .00000      .00   .00        0.  120   0   A38   .00
     3434   10A     .0        .00      88.3    157.04   0       0.   .00000      .00   .00        0.  120  99   A38   .00
     3434   11A   50.6     100.86     138.9    248.14   1    1575.   .07659      .00   .00        0.  120  11   A37   .01
     3434   12B    8.3      26.91       8.3     26.91   1     819.   .24940      .00   .00        0.  120   5   A37   .01
     3434   13B    6.0      19.45      14.3     38.31   1     473.   .10945      .00   .00        0.  120   5   A37   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   14A  TA 1161 QA   229.63 QAB   246.36 QB    16.73    3434   14B  TB 1156 QB    36.97 QBA   162.02 QA   125.05   *
*                                3434   14AB TAB 1161 QAB   246.36 QA   229.63 QB    16.73                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
     LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     3434   14AB   14.3      36.97     153.2    246.36   0       0.   .00000      .00   .00        0.  120   0   A37   .00
     3434   15A     .0        .00     153.2    246.36   0       0.   .00000      .00   .00        0.  120  99   A37   .00
     3434   16A   12.5      27.15     165.7    255.71   1    1133.   .06226      .00   .00        0.  120   9   A36   .01
     3434   17B   10.9      33.48      10.9     33.48   1     919.   .15512      .00   .00        0.  120   6   A39   .01
     3434   18C   12.6      35.08      12.6     35.08   1    1025.   .13550      .00   .00        0.  120   7   A39   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   19B  TB 1156 QB    29.93 QBC    60.47 QC    30.53    3434   19C  TC 1157 QC    31.98 QCB    61.16 QB    29.18   *
*                                3434   19BC TBC 1157 QBC    61.16 QB    29.18 QC    31.98                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
     LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV

 Program Package Serial Number:  2173
04/19/10   FILE: AREA2    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     2
                                        LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                      PROG F0601M

     Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                  STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
     LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     3434   19BC   12.6      31.98      23.5     61.16   0       0.   .00000      .00   .00        0.  120   0   A38   .00
     3434   20B     .0        .00      23.5     61.16   0       0.   .00000      .00   .00        0.  120  99   A38   .00
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3434	21B	8.4	28.17	31.9	75.50	1	663.	.12042	.00	.00	0.	120	5	A38	.01
3434	22C	11.6	34.46	11.6	34.46	1	745.	.15132	.00	.00	0.	120	6	A38	.01
3434	23C	14.0	41.59	25.6	68.59	1	793.	.10760	.00	.00	0.	120	6	A38	.01

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* CONFLUENCE Q'S *

* 3434 24B TB 1157 QB 73.37 QBC 137.01 QC 63.64 3434 24C TC 1157 QC 63.64 QCB 137.01 QB 73.37 *

* 3434 24BC TBC 1157 QBC 137.01 QB 73.37 QC 63.64 *

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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	24BC	25.6	63.64	57.5	137.01	0	0.	.00000	.00	.00	0.	120	0	A38	.00
3434	25B	.0	.00	57.5	137.01	0	0.	.00000	.00	.00	0.	120	99	A38	.00
3434	26B	19.0	49.47	76.5	173.36	1	1006.	.13251	.00	.00	0.	120	7	A37	.01
3434	27B	19.4	42.13	95.9	201.17	1	1258.	.08740	.00	.00	0.	120	9	A36	.01

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* CONFLUENCE Q'S *

* 3434 28A TA 1163 QA 246.25 QAB 414.63 QB 168.38 3434 28B TB 1161 QB 189.31 QBA 414.54 QA 225.23 *

* 3434 28AB TAB 1162 QAB 421.33 QA 239.65 QB 181.68 *

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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	28AB	95.9	189.31	261.6	421.33	0	0.	.00000	.00	.00	0.	120	0	A36	.00
3434	29A	.0	.00	261.6	421.33	0	0.	.00000	.00	.00	0.	120	99	A36	.00
3434	30B	17.1	47.34	17.1	47.34	1	773.	.19691	.00	.00	0.	120	6	A36	.01
3434	31B	18.7	51.77	35.8	92.08	1	790.	.14025	.00	.00	0.	120	6	A36	.01

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* CONFLUENCE Q'S *

* 3434 32A TA 1162 QA 421.33 QAB 455.41 QB 34.08 3434 32B TB 1156 QB 87.78 QBA 316.97 QA 229.19 *

* 3434 32AB TAB 1161 QAB 457.15 QA 414.54 QB 42.60 *

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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	32AB	35.8	87.78	297.4	457.15	0	0.	.00000	.00	.00	0.	120	0	A36	.00
3434	33A	.0	.00	297.4	457.15	0	0.	.00000	.00	.00	0.	120	99	A36	.00
3434	34A	34.0	62.85	331.4	493.76	4	1317.	.06084	4.50	.00	0.	120	11	A35	.01
3434	35A	34.6	38.63	366.0	517.31	1	1247.	.07592	.00	.00	0.	134	13	A35	.01
3434	36A	41.7	59.46	407.7	511.71	1	731.	.06978	.00	.00	0.	134	9	A34	.01
3434	37A	53.1	40.58	460.8	538.23	1	1686.	.05585	.00	.00	0.	134	19	A34	.01
3434	38A	31.6	14.41	492.4	533.96	1	1997.	.03319	.00	.00	0.	134	29	A33	.01
3434	39B	8.9	13.11	8.9	13.11	1	733.	.18097	.00	.00	0.	134	8	A33	.01
3434	40B	17.2	17.22	26.1	28.85	1	1226.	.08231	.00	.00	0.	134	13	A33	.01

Program Package Serial Number: 2173

04/19/10 FILE: AREA2 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 3

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV

****

* CONFLUENCE Q'S *

* 3434 41A TA 1174 QA 498.83 QAB 505.63 QB 6.80 3434 41B TB 1163 QB 24.64 QBA 208.95 QA 184.30 *

* 3434 41AB TAB 1173 QAB 505.83 QA 498.02 QB 7.81 *

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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	41AB	26.1	24.64	518.5	505.83	0	0.	.00000	.00	.00	0.	134	0	A32	.00
3434	42A	.0	.00	518.5	505.83	0	0.	.00000	.00	.00	0.	134	99	A32	.00
3434	43A	15.8	11.23	534.3	507.00	1	1076.	.02170	.00	.00	0.	134	18	A32	.01
3434	44A	16.6	12.39	550.9	494.16	1	926.	.02751	.00	.00	0.	134	16	A31	.01
3434	45A	15.0	11.18	565.9	486.43	1	756.	.02341	.00	.00	0.	134	15	A30	.01
3434	46A	13.2	8.04	579.1	480.87	1	873.	.02930	.00	.00	0.	134	17	A29	.01
3434	47A	14.9	10.35	594.0	474.51	1	800.	.03467	.00	.00	0.	134	15	A29	.01
3434	48A	17.9	9.46	611.9	470.72	1	836.	.02619	.00	.00	0.	134	18	A28	.01

3434	49B	2.4	2.71	2.4	2.71	1	543.	.02719	.00	.00	0.	134	10	A31	.01
3434	50B	6.5	6.71	8.9	6.95	1	652.	.03398	.00	.00	0.	134	11	A31	.01
3434	51B	9.2	8.98	18.1	11.54	1	585.	.03107	.00	.00	0.	134	11	A30	.01
3434	52B	11.8	10.79	29.9	16.50	1	586.	.03982	.00	.00	0.	134	11	A29	.01
3434	53B	8.8	6.49	38.7	19.53	1	763.	.03509	.00	.00	0.	134	14	A29	.01
3434	54B	3.0	1.41	41.7	18.13	1	908.	.02600	.00	.00	0.	134	20	A28	.01

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434   55A  TA 1191 QA   463.59 QAB   473.57 QB     9.98    3434   55B  TB 1176 QB    15.13 QBA    93.61 QA    78.48   *
*                              3434   55AB TAB 1191 QAB   473.57 QA   463.59 QB     9.98                                 *
*****************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	55AB	41.7	15.13	653.6	473.57	0	0.	.00000	.00	.00	0.	134	0	A28	.00
3434	56A	.0	.00	653.6	473.57	0	0.	.00000	.00	.00	0.	134	99	A28	.00
3434	57B	3.4	3.26	3.4	3.26	1	686.	.02217	.00	.00	0.	134	12	A31	.01
3434	58B	7.5	7.19	10.9	7.47	1	673.	.03337	.00	.00	0.	134	12	A31	.01
3434	59B	12.9	11.64	23.8	14.27	1	656.	.03216	.00	.00	0.	134	12	A30	.01
3434	60B	20.5	11.74	44.3	22.17	1	893.	.02686	.00	.00	0.	134	18	A29	.01
3434	61B	9.2	7.78	53.5	20.38	1	531.	.02277	.00	.00	0.	134	12	A29	.01
3434	62B	9.3	9.28	62.8	20.02	1	496.	.03109	.00	.00	0.	134	10	A29	.01
3434	63B	9.0	9.73	71.8	20.05	1	458.	.03953	.00	.00	0.	134	9	A29	.01
3434	64B	8.1	6.43	79.9	23.69	1	416.	.00951	.00	.00	0.	134	12	A28	.01

```
*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434   65A  TA 1191 QA   473.57 QAB   492.06 QB    18.49    3434   65B  TB 1165 QB    20.81 QBA    85.72 QA    64.91   *
*                              3434   65AB TAB 1191 QAB   492.06 QA   473.57 QB    18.49                                 *
*****************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	65AB	79.9	20.81	733.5	492.06	0	0.	.00000	.00	.00	0.	134	0	A28	.00

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 Program Package Serial Number:  2173
04/19/10   FILE: AREA2    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     4
                                   LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                      PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                          STORM DAY 4
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	66A	.0	.00	733.5	492.06	0	0.	.00000	.00	.00	0.	134	99	A28	.00
3434	67B	10.2	6.62	10.2	6.62	1	834.	.02935	.00	.00	0.	134	16	A29	.01
3434	68B	17.2	18.59	27.4	19.46	1	436.	.03224	.00	.00	0.	134	9	A29	.01
3434	69B	18.7	13.77	46.1	30.16	1	566.	.02234	.00	.00	0.	134	13	A28	.01
3434	70B	46.8	32.15	92.9	49.94	1	644.	.02458	.00	.00	0.	134	14	A28	.01
3434	71B	.0	.00	92.9	47.36	2	1885.	.00129	.00	.00	0.	134	5	A28	.00

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434   72A  TA 1191 QA   492.06 QAB   513.12 QB    21.06    3434   72B  TB 1193 QB    21.24 QBA   503.36 QA   482.12   *
*                              3434   72AB TAB 1191 QAB   513.12 QA   492.06 QB    21.06                                 *
*****************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	72AB	92.9	21.24	826.4	513.12	0	0.	.00000	.00	.00	0.	134	0	A28	.00
3434	73A	.0	.00	826.4	513.12	0	0.	.00000	.00	.00	0.	134	99	A28	.00
3434	74A	22.8	6.32	849.2	514.16	2	1259.	.02178	.00	.00	0.	134	30	A28	.01
3434	75B	6.9	7.67	6.9	7.67	2	347.	.03217	.00	.00	0.	134	8	A28	.01
3434	76B	10.5	5.21	17.4	12.58	2	831.	.02383	.00	.00	0.	134	19	A28	.01

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434   77A  TA 1194 QA   507.91 QAB   508.70 QB      .80    3434   77B  TB 1161 QB    10.84 QBA    75.10 QA    64.26   *
*                              3434   77AB TAB 1194 QAB   508.70 QA   507.91 QB      .80                                 *
*****************************************************************************************************************
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LOCATION	SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV

3434	77AB	17.4	10.84	866.6	508.70	0	0.	.00000	.00	.00	0.	134	0	A28	.00
3434	78A	.0	.00	866.6	508.70	0	0.	.00000	.00	.00	0.	134	99	A28	.00
3434	79A	30.7	7.55	897.3	509.96	2	923.	.02043	.00	.00	0.	134	30	A27	.01
3434	80A	11.6	2.85	908.9	507.24	2	1385.	.01322	.00	.00	0.	134	30	A27	.01
3434	81B	6.8	4.40	6.8	4.40	2	724.	.02532	.00	.00	0.	134	15	A28	.01
3434	82B	13.5	3.32	20.3	7.13	2	1285.	.02168	.00	.00	0.	134	30	A27	.01

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* CONFLUENCE Q'S *

* 3434 83A TA 1200 QA 494.81 QAB 496.06 QB 1.26 3434 83B TB 1171 QB 6.16 QBA 93.15 QA 86.99 *

* 3434 83AB TAB 1200 QAB 496.06 QA 494.81 QB 1.26 *

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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	83AB	20.3	6.16	929.2	496.06	0	0.	.00000	.00	.00	0.	134	0	A27	.00
3434	84A	.0	.00	929.2	496.06	0	0.	.00000	.00	.00	0.	134	99	A27	.00
3434	85A	15.2	3.74	944.4	496.62	2	993.	.01750	.00	.00	0.	134	30	A27	.01
3434	86A	16.0	3.41	960.4	493.37	2	1164.	.01583	.00	.00	0.	134	30	A26	.01
3434	87A	11.7	2.49	972.1	486.88	2	1084.	.01507	.00	.00	0.	134	30	A26	.01
3434	88B	4.5	3.09	4.5	3.09	2	635.	.02460	.00	.00	0.	134	14	A28	.01
3434	89B	6.4	3.38	10.9	5.78	2	842.	.02703	.00	.00	0.	134	18	A28	.01
3434	90B	12.5	3.07	23.4	8.08	2	1181.	.02378	.00	.00	0.	134	30	A27	.01

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	91B	10.6	2.61	34.0	8.98	2	994.	.01949	.00	.00	0.	134	30	A27	.01
3434	92B	8.8	2.16	42.8	9.51	2	903.	.01708	.00	.00	0.	134	30	A27	.01
3434	93B	5.2	1.11	48.0	9.50	2	829.	.01516	.00	.00	0.	134	30	A26	.01

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* CONFLUENCE Q'S *

* 3434 94A TA 1208 QA 480.85 QAB 486.07 QB 5.22 3434 94B TB 1188 QB 9.24 QBA 119.02 QA 109.78 *

* 3434 94AB TAB 1208 QAB 486.07 QA 480.85 QB 5.22 *

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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	94AB	48.0	9.24	1020.1	486.07	0	0.	.00000	.00	.00	0.	134	0	A26	.00
3434	95A	.0	.00	1020.1	486.07	0	0.	.00000	.00	.00	0.	134	99	A26	.00
3434	96A	12.0	2.56	1032.1	486.45	2	838.	.01013	.00	.00	0.	134	30	A26	.01
3434	97A	5.7	1.22	1037.8	481.20	2	855.	.01310	.00	.00	0.	134	30	A26	.01
3434	98A	1.2	.17	1039.0	477.61	2	442.	.00831	.00	.00	0.	124	30	A25	.01
3434	99B	9.3	2.29	9.3	2.29	2	998.	.01536	.00	.00	0.	134	30	A27	.01
3434	100B	15.7	3.35	25.0	4.73	2	1390.	.01547	.00	.00	0.	134	30	A26	.01
3434	101B	18.3	3.90	43.3	6.58	2	1139.	.01683	.00	.00	0.	134	30	A26	.01
3434	102B	25.4	5.42	68.7	9.94	2	1059.	.01385	.00	.00	0.	134	30	A26	.01
3434	103B	17.7	3.20	86.4	11.68	2	931.	.01281	.00	.00	0.	134	30	A25	.01

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* CONFLUENCE Q'S *

* 3434 104A TA 1215 QA 475.46 QAB 481.59 QB 6.13 3434 104B TB 1180 QB 11.44 QBA 80.67 QA 69.24 *

* 3434 104AB TAB 1215 QAB 481.59 QA 475.46 QB 6.13 *

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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	104AB	86.4	11.44	1125.4	481.59	0	0.	.00000	.00	.00	0.	124	0	A25	.00
3434	105A	.0	.00	1125.4	481.59	0	0.	.00000	.00	.00	0.	124	99	A25	.00
3434	106A	16.4	2.27	1141.8	482.05	2	811.	.01185	.00	.00	0.	124	30	A25	.01
3434	107A	16.0	2.13	1157.8	479.00	2	1071.	.01048	.00	.00	0.	124	30	A24	.01
3434	108A	13.5	2.01	1171.3	470.51	2	1180.	.00865	.00	.00	0.	134	30	A24	.01
3434	109B	4.7	10.09	4.7	10.09	1	249.	.21274	.00	.00	0.	134	5	A33	.01
3434	110B	12.7	13.61	17.4	22.81	1	941.	.07483	.00	.00	0.	134	12	A33	.01
3434	111B	12.2	6.14	29.6	23.99	1	1503.	.02325	.00	.00	0.	134	25	A32	.01

3434	112B	31.6	10.76	61.2	21.54	1	1950.	.02481	.00	.00	0.	134	30	A30	.01
3434	113B	25.6	18.89	86.8	22.65	1	732.	.03272	.00	.00	0.	134	14	A29	.01
3434	114B	27.2	17.65	114.0	35.44	1	826.	.02638	.00	.00	0.	134	16	A29	.01
3434	115B	19.7	9.49	133.7	39.32	2	968.	.02227	.00	.00	0.	134	21	A29	.01
3434	116B	12.7	6.31	146.4	39.61	2	830.	.02372	.00	.00	0.	134	19	A28	.01
3434	117B	15.2	4.21	161.6	41.51	2	1193.	.02652	.00	.00	0.	134	30	A28	.01
3434	118B	7.2	1.99	168.8	41.17	2	1110.	.01755	.00	.00	0.	134	30	A28	.01
3434	119C	10.3	8.17	10.3	8.17	2	507.	.02527	.00	.00	0.	134	12	A28	.01
3434	120C	12.5	3.46	22.8	11.13	2	1321.	.01914	.00	.00	0.	134	30	A28	.01

Program Package Serial Number: 2173

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

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                                                                                                                                                STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV      CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
   LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
*****************************************************************************************************************************
*                                                          CONFLUENCE Q'S                                                   *
*   3434  121B  TB 1181 QB    39.65 QBC    43.73 QC     4.09    3434  121C  TC 1168 QC     8.94 QCB    29.00 QB    20.06   *
*                                3434  121BC TBC 1181 QBC    43.73 QB    39.65 QC     4.09                                   *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV      CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
   LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
   3434  121BC    22.8       8.94     191.6     43.73   0       0.   .00000      .00   .00        0.  134   0   A27   .00
   3434  122B      .0        .00     191.6     43.73   0       0.   .00000      .00   .00        0.  134  99   A27   .00
   3434  123B    12.5       3.07     204.1     44.85   2     888.   .01680      .00   .00        0.  134  30   A27   .01
   3434  124C     8.3       7.15       8.3      7.15   2     484.   .02702      .00   .00        0.  134  11   A28   .01
   3434  125C    15.5       6.87      23.8     13.46   2     961.   .02641      .00   .00        0.  134  21   A28   .01
   3434  126C    22.0       6.09      45.8     17.96   2    1258.   .02513      .00   .00        0.  134  30   A28   .01
   3434  127C    18.1       4.45      63.9     19.64   2    1117.   .01701      .00   .00        0.  134  30   A27   .01
   3434  128C     9.8       2.86      73.7     19.36   2     820.   .01625      .00   .00        0.  134  27   A27   .01
*****************************************************************************************************************************
*                                                          CONFLUENCE Q'S                                                   *
*   3434  129B  TB 1184 QB    44.07 QBC    61.74 QC    17.67    3434  129C  TC 1180 QC    18.66 QCB    59.83 QB    41.17   *
*                                3434  129BC TBC 1183 QBC    61.88 QB    43.80 QC    18.08                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV      CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
   LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
   3434  129BC    73.7      18.66     277.8     61.88   0       0.   .00000      .00   .00        0.  134   0   A27   .00
   3434  130B      .0        .00     277.8     61.88   0       0.   .00000      .00   .00        0.  134  99   A27   .00
   3434  131B    18.6       4.58     296.4     63.00   2     912.   .01467      .00   .00        0.  134  30   A27   .01
   3434  132B    18.7       3.99     315.1     63.08   2    1274.   .01221      .00   .00        0.  134  30   A26   .01
   3434  133B    17.4       2.51     332.5     62.05   2    1103.   .01178      .00   .00        0.  124  30   A26   .01
   3434  134B    10.8       1.49     343.3     61.18   2    1118.   .01170      .00   .00        0.  124  30   A25   .01
   3434  135C     6.4        .89       6.4       .89   2    1001.   .01083      .00   .00        0.  124  30   A25   .01
   3434  136C     7.9       1.09      14.3      1.76   2     833.   .01192      .00   .00        0.  124  30   A25   .01
*****************************************************************************************************************************
*                                                          CONFLUENCE Q'S                                                   *
*   3434  137B  TB 1205 QB    59.97 QBC    60.90 QC      .93    3434  137C  TC 1180 QC     1.71 QCB    29.69 QB    27.98   *
*                                3434  137BC TBC 1205 QBC    60.90 QB    59.97 QC      .93                                   *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV      CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
   LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
   3434  137BC    14.3       1.71     357.6     60.90   0       0.   .00000      .00   .00        0.  124   0   A25   .00
   3434  138B      .0        .00     357.6     60.90   0       0.   .00000      .00   .00        0.  124  99   A25   .00
   3434  139B    19.9       2.65     377.5     61.50   2    1293.   .01079      .00   .00        0.  124  30   A24   .01
*****************************************************************************************************************************
*                                                          CONFLUENCE Q'S                                                   *
*   3434  140A  TA 1225 QA   459.34 QAB   507.88 QB    48.54    3434  140B  TB 1212 QB    59.98 QBA   192.73 QA   132.75   *
*                                3434  140AB TAB 1225 QAB   507.88 QA   459.34 QB    48.54                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV      CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
   LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
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 Program Package Serial Number:  2173
04/19/10   FILE: AREA2    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     7
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                      PROG F0601M

      Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                STORM DAY 4
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
      LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
      3434  140AB  377.5      59.98    1548.8    507.88   0       0.   .00000      .00   .00        0.  134   0   A 0   .00
      3434  141A      .0        .00    1548.8    507.88   0       0.   .00000      .00   .00        0.  134  99   A 0   .00
      3434  142A    26.7       3.98    1575.5    508.54   2    1237.   .00746      .00   .00        0.  134  30   A24   .01
      3434  143A    22.5       2.86    1598.0    496.30   2    1253.   .00681      .00   .00        0.  134  30   A23   .01
      3434  144A    11.4       1.45    1609.4    484.25   2    1053.   .00644      .00   .00        0.  134  30   A23   .01
      3434  145A     2.8        .36    1612.2    476.47   2     455.   .00290      .00   .00        0.  134  30   A23   .01
      3434  146B     5.5        .99       5.5       .99   2     845.   .01594      .00   .00        0.  134  30   A25   .01
      3434  147B    11.9       2.15      17.4      2.77   2     960.   .01224      .00   .00        0.  134  30   A25   .01
      3434  148B    21.1       3.14      38.5      5.04   2    1305.   .01095      .00   .00        0.  134  30   A24   .01
      3434  149B    17.1       2.55      55.6      6.37   2    1173.   .00987      .00   .00        0.  134  30   A24   .01
      3434  150B    17.3       2.58      72.9      7.40   2    1140.   .00683      .00   .00        0.  134  30   A24   .01
      3434  151B    12.4       1.58      85.3      7.52   2    1026.   .00827      .00   .00        0.  134  30   A23   .01
      3434  152B    14.4       1.83      99.7      7.91   2    1356.   .00672      .00   .00        0.  134  30   A23   .01
***********************************************************************************************************************************
*                                                      CONFLUENCE Q'S                                                             *
*   3434  153A  TA 1242 QA   473.24 QAB   479.68 QB     6.44    3434  153B  TB 1211 QB     7.81 QBA   117.00 QA   109.19   *
*                                 3434  153AB TAB 1242 QAB   479.68 QA   473.24 QB     6.44                                     *
***********************************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
      LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
      3434  153AB   99.7       7.81    1711.9    479.68   0       0.   .00000      .00   .00        0.  134   0   A22   .00
      3434  154A      .0        .00    1711.9    479.68   0       0.   .00000      .00   .00        0.  134  99   A22   .00
      3434  155A     6.8        .83    1718.7    479.81   2    1038.   .00510      .00   .00        0.  134  30   A22   .01

 Program Package Serial Number:  2173
04/19/10   FILE: AREA2    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     8
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                      PROG F0601M

      Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                STORM DAY 4
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
      LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
      3434  156B     9.7       6.17       9.7      6.17   2     481.   .01278      .00   .00        0.  134  14   A27   .01
      3434  157B     9.4       2.31      19.1      7.87   2     992.   .02103      .00   .00        0.  134  30   A27   .01
      3434  158C    13.3      11.46      13.3     11.46   2     471.   .02540      .00   .00        0.  134  11   A28   .01
      3434  159C    12.6       3.10      25.9     13.92   2     982.   .02330      .00   .00        0.  134  30   A27   .01
***********************************************************************************************************************************
*                                                      CONFLUENCE Q'S                                                             *
*   3434  160B  TB 1168 QB     6.95 QBC    16.78 QC     9.83    3434  160C  TC 1164 QC    12.15 QCB    18.22 QB     6.07   *
*                                 3434  160BC TBC 1165 QBC    18.43 QB     6.46 QC    11.97                                    *
***********************************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
      LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
      3434  160BC   25.9      12.15      45.0     18.43   0       0.   .00000      .00   .00        0.  134   0   A27   .00
      3434  161B      .0        .00      45.0     18.43   0       0.   .00000      .00   .00        0.  134  99   A27   .00
      3434  162B    14.3       3.52      59.3     21.56   2    1008.   .01980      .00   .00        0.  134  30   A27   .01
      3434  163B    21.3       4.54      80.6     22.77   2    1171.   .01921      .00   .00        0.  134  30   A26   .01
      3434  164B    20.3       4.33     100.9     23.48   2    1183.   .01895      .00   .00        0.  134  30   A26   .01
      3434  165B     9.1       1.65     110.0     22.86   2    1032.   .01497      .00   .00        0.  134  30   A25   .01
      3434  166C     8.9       6.09       8.9      6.09   2     517.   .02021      .00   .00        0.  134  13   A27   .01
      3434  167C    11.3       2.41      20.2      8.01   2    1220.   .01689      .00   .00        0.  134  30   A26   .01
      3434  168C    19.9       4.24      40.1      9.60   2    1291.   .01541      .00   .00        0.  134  30   A26   .01
      3434  169C    13.6       2.46      53.7     10.02   2    1191.   .01518      .00   .00        0.  134  30   A25   .01
***********************************************************************************************************************************
*                                                      CONFLUENCE Q'S                                                             *
*   3434  170B  TB 1188 QB    21.92 QBC    31.00 QC     9.08    3434  170C  TC 1185 QC     9.38 QCB    30.37 QB    20.98   *
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*                                3434  170BC TBC 1188 QBC    31.00 QB    21.92 QC     9.08                                    *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV      CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  170BC   53.7       9.38     163.7     31.00   0       0.   .00000      .00   .00        0.  134   0   A25   .00
    3434  171B      .0        .00     163.7     31.00   0       0.   .00000      .00   .00        0.  134  99   A25   .00
    3434  172C    16.1      11.87      16.1     11.87   2     431.   .02130      .00   .00        0.  134  12   A27   .01
    3434  173C    31.2       7.67      47.3     19.04   2    1204.   .02320      .00   .00        0.  134  30   A27   .01
    3434  174C    24.8       5.29      72.1     21.43   2    1096.   .01948      .00   .00        0.  134  30   A26   .01
    3434  175C    22.3       4.75      94.4     22.87   2    1184.   .02112      .00   .00        0.  134  30   A26   .01
    3434  176C    10.7       1.93     105.1     22.75   2    1135.   .01611      .00   .00        0.  134  30   A25   .01
    3434  177D    11.3       5.45      11.3      5.45   2     751.   .02682      .00   .00        0.  134  18   A27   .01
    3434  178D    24.6       6.05      35.9     10.89   2    1240.   .02308      .00   .00        0.  134  30   A27   .01
    3434  179D    21.7       4.63      57.6     13.38   2    1095.   .02002      .00   .00        0.  134  30   A26   .01
    3434  180D    26.9       4.86      84.5     15.84   2    1307.   .01959      .00   .00        0.  134  30   A25   .01
    3434  181D    21.7       3.92     106.2     17.11   2    1222.   .01335      .00   .00        0.  134  30   A25   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  182C  TC 1183 QC    21.55 QCD    37.45 QD    15.90    3434  182D  TD 1187 QD    16.39 QDC    36.66 QC    20.27   *
*                                3434  182CD TCD 1184 QCD    37.55 QC    21.42 QD    16.13                                   *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV      CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV

 Program Package Serial Number:  2173
04/19/10   FILE: AREA2    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     9
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                      PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                          STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV      CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  182CD   106.2      16.39     211.3     37.55   0       0.   .00000      .00   .00        0.  134   0   A25   .00
    3434  183C      .0        .00     211.3     37.55   0       0.   .00000      .00   .00        0.  134  99   A25   .00
    3434  184C    21.5       3.89     232.8     38.66   2     785.   .00872      .00   .00        0.  134  30   A25   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  185B  TB 1188 QB    31.00 QBC    68.89 QC    37.89    3434  185C  TC 1189 QC    37.97 QCB    68.79 QB    30.82   *
*                                3434  185BC TBC 1188 QBC    68.89 QB    31.00 QC    37.89                                   *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV      CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  185BC   232.8      37.97     396.5     68.89   0       0.   .00000      .00   .00        0.  134   0   A25   .00
    3434  186B      .0        .00     396.5     68.89   0       0.   .00000      .00   .00        0.  134  99   A25   .00
    3434  187B    26.3       4.76     422.8     70.04   2     946.   .00932      .00   .00        0.  134  30   A25   .01
    3434  188B    16.6       2.47     439.4     69.36   2    1028.   .01114      .00   .00        0.  134  30   A24   .01
    3434  189B    12.2       1.82     451.6     68.64   2    1194.   .00944      .00   .00        0.  134  30   A24   .01
    3434  190B     8.0       1.19     459.6     67.33   2    1324.   .00808      .00   .00        0.  134  30   A24   .01
    3434  191C    12.3       2.62      12.3      2.62   2    1245.   .01518      .00   .00        0.  134  30   A26   .01
    3434  192C    25.1       4.54      37.4      5.83   2    1320.   .01364      .00   .00        0.  134  30   A25   .01
    3434  193C    21.8       3.94      59.2      7.92   2    1014.   .01300      .00   .00        0.  134  30   A25   .01
    3434  194C    16.2       2.41      75.4      9.35   2    1053.   .01108      .00   .00        0.  134  30   A24   .01
    3434  195C     8.2       1.22      83.6      9.57   2    1156.   .00825      .00   .00        0.  134  30   A24   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  196B  TB 1213 QB    65.44 QBC    72.97 QC     7.52    3434  196C  TC 1194 QC     9.25 QCB    50.34 QB    41.09   *
*                                3434  196BC TBC 1213 QBC    72.97 QB    65.44 QC     7.52                                   *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV      CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  196BC   83.6       9.25     543.2     72.97   0       0.   .00000      .00   .00        0.  134   0   A23   .00
    3434  197B      .0        .00     543.2     72.97   0       0.   .00000      .00   .00        0.  134  99   A23   .00
    3434  198B     8.1       1.03     551.3     73.18   2     844.   .01054      .00   .00        0.  134  30   A23   .01
    3434  199C     9.3       2.85       9.3      2.85   2     768.   .02460      .00   .00        0.  134  24   A26   .01
    3434  200C    16.3       3.48      25.6      5.85   2     992.   .02284      .00   .00        0.  134  30   A26   .01
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3434	201C	14.7	2.66	40.3	7.39	2	1104.	.01677	.00	.00	0.	134	30	A25	.01
3434	202C	13.5	2.44	53.8	8.51	2	1176.	.01333	.00	.00	0.	134	30	A25	.01
3434	203C	16.6	2.47	70.4	9.12	2	1304.	.01164	.00	.00	0.	134	30	A24	.01
3434	204C	18.2	2.71	88.6	9.43	2	1076.	.01273	.00	.00	0.	134	30	A24	.01
3434	205C	17.8	2.65	106.4	9.92	2	1017.	.00909	.00	.00	0.	134	30	A24	.01
3434	206C	14.6	2.17	121.0	10.40	2	1273.	.00881	.00	.00	0.	134	30	A24	.01
3434	207C	11.4	1.45	132.4	10.52	2	981.	.00747	.00	.00	0.	134	30	A23	.01
3434	208C	11.2	1.42	143.6	10.78	2	917.	.01030	.00	.00	0.	134	30	A23	.01

Program Package Serial Number: 2173

04/19/10 FILE: AREA2 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 10

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

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                                                                                                                                                                STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
LOCATION          AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
*****************************************************************************************************************************
*                                                          CONFLUENCE Q'S                                                   *
*   3434  209B  TB 1217 QB    72.65 QBC    83.41 QC    10.75    3434  209C  TC 1227 QC    10.76 QCB    76.38 QB    65.62   *
*                                3434  209BC TBC 1217 QBC    83.41 QB    72.65 QC    10.75                                   *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
LOCATION          AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
3434  209BC       143.6     10.76     694.9     83.41   0       0.   .00000      .00   .00        0.  134   0   A23   .00
3434  210B          .0       .00     694.9     83.41   0       0.   .00000      .00   .00        0.  134  99   A23   .00
3434  211B        19.9      2.53     714.8     83.91   2    1098.   .00735      .00   .00        0.  134  30   A23   .01
3434  212B        22.1      2.81     736.9     83.36   2    1084.   .00864      .00   .00        0.  134  30   A23   .01
3434  213B        18.8      2.39     755.7     82.96   2     995.   .00756      .00   .00        0.  134  30   A23   .01
3434  214B        15.2      1.85     770.9     82.54   2     893.   .00543      .00   .00        0.  134  30   A22   .01
3434  215C         3.3       .49       3.3       .49   2     830.   .01087      .00   .00        0.  134  30   A24   .01
3434  216C         5.2       .66       8.5      1.02   2    1145.   .00747      .00   .00        0.  134  30   A23   .01
3434  217C         5.7       .73      14.2      1.39   2    1115.   .00860      .00   .00        0.  134  30   A23   .01
3434  218C         7.6       .97      21.8      1.93   2     988.   .00779      .00   .00        0.  134  30   A23   .01
3434  219C         5.8       .71      27.6      2.28   2     954.   .00452      .00   .00        0.  134  30   A22   .01
*****************************************************************************************************************************
*                                                          CONFLUENCE Q'S                                                   *
*   3434  220B  TB 1242 QB    81.78 QBC    83.29 QC     1.51    3434  220C  TC 1192 QC     2.12 QCB    42.70 QB    40.59   *
*                                3434  220BC TBC 1242 QBC    83.29 QB    81.78 QC     1.51                                   *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
LOCATION          AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
3434  220BC        27.6      2.12     798.5     83.29   0       0.   .00000      .00   .00        0.  134   0   A22   .00
3434  221B          .0       .00     798.5     83.29   0       0.   .00000      .00   .00        0.  134  99   A22   .00
3434  222B         6.7       .82     805.2     83.42   2     625.   .00600      .00   .00        0.  134  30   A22   .01
*****************************************************************************************************************************
*                                                          CONFLUENCE Q'S                                                   *
*   3434  223A  TA 1247 QA   470.54 QAB   553.58 QB    83.04    3434  223B  TB 1246 QB    83.10 QBA   553.62 QA   470.52   *
*                                3434  223AB TAB 1246 QAB   553.62 QA   470.52 QB    83.10                                   *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
LOCATION          AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
3434  223AB       805.2     83.10    2523.9    553.62   0       0.   .00000      .00   .00        0.  134   0   A22   .00
3434  224A          .0       .00    2523.9    553.62   0       0.   .00000      .00   .00        0.  134  99   A22   .00
3434  225A        18.8      2.29    2542.7    553.98   2     799.   .00880      .00   .00        0.  134  30   A22   .01
3434  226A        17.2      2.10    2559.9    552.09   2     822.   .00780      .00   .00        0.  134  30   A22   .01
3434  227A        10.2      1.24    2570.1    549.11   2    1130.   .00360      .00   .00        0.  134  30   A22   .01
3434  228A         9.3      1.13    2579.4    536.41   2    1122.   .00430      .00   .00        0.  134  30   A22   .01
3434  229A        12.0      1.46    2591.4    527.22   2    1139.   .00970      .00   .00        0.  134  30   A22   .01
3434  230A          .0       .00    2591.4    523.63   0       0.   .00000      .00   .00        0.  134  99   A22   .00
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 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     1
                                       LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M

     Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                STORM DAY 4
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434    1A    12.3      41.25      12.3     41.25   1     541.   .15141      .00   .00        0.  120   5   A38   .01
    3434    2A    30.7      39.53      43.0     76.62   1    1689.   .13251      .00   .00        0.  134  13   A38   .01
    3434    3A    35.3      37.01      78.3    100.02   1    1702.   .11474      .00   .00        0.  134  15   A36   .01
    3434    4B     9.0      16.66       9.0     16.66   1     884.   .15566      .00   .00        0.  134   8   A38   .01
    3434    5B    25.2      35.50      34.2     47.87   1    1509.   .21074      .00   .00        0.  134  11   A37   .01
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434    6A  TA 1163 QA    91.53 QAB   130.41 QB    38.88    3434    6B  TB 1160 QB    45.37 QBA   120.25 QA    74.89   *
 *                                3434    6AB TAB 1162 QAB   131.74 QA    88.93 QB    42.81                                *
 ***********************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434    6AB   34.2      45.37     112.5    131.74   0       0.   .00000      .00   .00        0.  134   0   A36   .00
    3434    7A     .0        .00     112.5    131.74   0       0.   .00000      .00   .00        0.  134  99   A36   .00
    3434    8A    41.8      60.99     154.3    151.93   1    1114.   .15099      .00   .00        0.  134  10   A36   .01
    3434    9A    27.1      24.75     181.4    166.61   1    1090.   .09619      .00   .00        0.  124  13   A36   .01
    3434   10B     6.5      15.92       6.5     15.92   1     430.   .42604      .00   .00        0.  134   5   A36   .01
    3434   11B    15.9      24.94      22.4     39.34   1    1112.   .21130      .00   .00        0.  134   9   A36   .01
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434   12A  TA 1164 QA   161.58 QAB   173.80 QB    12.22    3434   12B  TB 1157 QB    35.38 QBA   123.78 QA    88.40   *
 *                                3434   12AB TAB 1163 QAB   176.56 QA   160.87 QB    15.70                                *
 ***********************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   12AB   22.4      35.38     203.8    176.56   0       0.   .00000      .00   .00        0.  124   0   A35   .00
    3434   13A     .0        .00     203.8    176.56   0       0.   .00000      .00   .00        0.  124  99   A35   .00
    3434   14A    21.2      18.24     225.0    185.22   1     885.   .05754      .00   .00        0.  124  13   A35   .01
    3434   15A    11.5       9.89     236.5    183.10   1     872.   .05423      .00   .00        0.  124  13   A35   .01
    3434   16B    11.3      13.86      11.3     13.86   1     811.   .16661      .00   .00        0.  124   9   A35   .01
    3434   17B    15.1       9.87      26.4     22.03   1    1461.   .13071      .00   .00        0.  124  17   A35   .01
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434   18A  TA 1167 QA   179.77 QAB   196.36 QB    16.59    3434   18B  TB 1164 QB    18.86 QBA   178.92 QA   160.06   *
 *                                3434   18AB TAB 1167 QAB   196.36 QA   179.77 QB    16.59                                *
 ***********************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   18AB   26.4      18.86     262.9    196.36   0       0.   .00000      .00   .00        0.  124   0   A35   .00
    3434   19A     .0        .00     262.9    196.36   0       0.   .00000      .00   .00        0.  124  99   A35   .00
    3434   20A     4.1       4.74     267.0    196.68   1     569.   .07099      .00   .00        0.  124   9   A34   .01
    3434   21B     2.8       5.81       2.8      5.81   1     346.   .23394      .00   .00        0.  124   5   A35   .01
    3434   22B     7.2       5.75      10.0     10.76   1    1221.   .12821      .00   .00        0.  124  14   A35   .01

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     2
                                       LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M

     Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                STORM DAY 4
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434   23A  TA 1168 QA   194.99 QAB   200.23 QB     5.24    3434   23B  TB 1161 QB     7.74 QBA    92.52 QA    84.79   *
 *                                3434   23AB TAB 1168 QAB   200.23 QA   194.99 QB     5.24                                *
 ***********************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	23AB	10.0	7.74	277.0	200.23	0	0.	.00000	.00	.00	0.	124	0	A34	.00
3434	24A	.0	.00	277.0	200.23	0	0.	.00000	.00	.00	0.	124	99	A34	.00
3434	25B	8.0	8.49	8.0	8.49	1	703.	.08349	.00	.00	0.	124	10	A34	.01

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434   26A  TA 1168 QA   200.23 QAB   202.78 QB     2.55    3434   26B  TB 1160 QB     7.12 QBA    81.78 QA    74.66   *
*                              3434   26AB TAB 1168 QAB   202.78 QA   200.23 QB     2.55                                 *
*****************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	26AB	8.0	7.12	285.0	202.78	0	0.	.00000	.00	.00	0.	124	0	A34	.00
3434	27A	.0	.00	285.0	202.78	0	0.	.00000	.00	.00	0.	124	99	A34	.00
3434	28A	9.8	11.33	294.8	203.51	1	581.	.06721	.00	.00	0.	124	9	A34	.01
3434	29A	11.6	7.58	306.4	203.09	1	1068.	.06672	.00	.00	0.	124	16	A34	.01
3434	30A	12.8	8.40	319.2	199.47	1	908.	.05324	.00	.00	0.	124	15	A33	.01
3434	31A	15.0	8.56	334.2	196.44	1	808.	.04483	.00	.00	0.	124	16	A32	.01
3434	32B	5.4	8.23	5.4	8.23	1	438.	.08768	.00	.00	0.	124	7	A35	.01
3434	33B	7.1	4.09	12.5	11.39	1	986.	.03490	.00	.00	0.	124	18	A34	.01
3434	34B	9.2	7.43	21.7	9.60	1	794.	.04285	.00	.00	0.	124	13	A34	.01
3434	35B	10.5	9.19	32.2	13.41	1	739.	.04034	.00	.00	0.	124	12	A34	.01
3434	36B	21.2	12.10	53.4	20.95	1	892.	.03824	.00	.00	0.	124	17	A33	.01
3434	37B	28.0	13.87	81.4	27.63	1	884.	.04316	.00	.00	0.	124	18	A32	.01
3434	38B	35.9	17.78	117.3	35.64	1	894.	.04287	.00	.00	0.	124	18	A32	.01
3434	39B	44.0	14.54	161.3	44.57	1	933.	.03160	.00	.00	0.	124	24	A31	.01
3434	40B	.0	.00	161.3	43.25	2	2066.	.00005	.00	.00	0.	124	5	A31	.00
3434	41C	10.4	17.67	10.4	17.67	1	855.	.20664	.00	.00	0.	134	8	A36	.01
3434	42C	10.9	14.19	21.3	28.83	1	767.	.15958	.00	.00	0.	124	9	A36	.01
3434	43C	12.7	14.26	34.0	38.87	1	896.	.15339	.00	.00	0.	124	10	A35	.01
3434	44D	8.9	9.58	8.9	9.58	1	1083.	.21389	.00	.00	0.	124	11	A36	.01

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434   45C  TC 1160 QC    36.12 QCD    44.58 QD     8.46    3434   45D  TD 1160 QD     8.46 QDC    44.58 QC    36.12   *
*                              3434   45CD TCD 1160 QCD    44.58 QC    36.12 QD     8.46                                 *
*****************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	45CD	8.9	8.46	42.9	44.58	0	0.	.00000	.00	.00	0.	124	0	A35	.00
3434	46C	.0	.00	42.9	44.58	0	0.	.00000	.00	.00	0.	124	99	A35	.00
3434	47C	2.0	2.71	44.9	45.05	1	586.	.08664	.00	.00	0.	124	8	A35	.01

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	48D	7.4	13.59	7.4	13.59	1	491.	.17498	.00	.00	0.	124	6	A36	.01
3434	49D	21.3	13.92	28.7	26.44	1	1488.	.13975	.00	.00	0.	124	17	A35	.01

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434   50C  TC 1163 QC    43.33 QCD    63.47 QD    20.14    3434   50D  TD 1161 QD    21.06 QDC    62.14 QC    41.08   *
*                              3434   50CD TCD 1162 QCD    64.13 QC    43.27 QD    20.86                                 *
*****************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	50CD	28.7	21.06	73.6	64.13	0	0.	.00000	.00	.00	0.	124	0	A35	.00
3434	51C	.0	.00	73.6	64.13	0	0.	.00000	.00	.00	0.	124	99	A35	.00
3434	52D	4.2	8.71	4.2	8.71	1	205.	.15151	.00	.00	0.	124	5	A35	.01
3434	53D	7.8	10.58	12.0	18.43	1	598.	.09980	.00	.00	0.	124	8	A35	.01

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
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*   3434   54C  TC 1162 QC    64.13 QCD    71.40 QD     7.27    3434   54D  TD 1157 QD    16.04 QDC    46.91 QC    30.87   *
*                              3434   54CD TCD 1161 QCD    71.49 QC    62.14 QD     9.35                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   54CD   12.0      16.04      85.6     71.49   0       0.   .00000      .00   .00        0.  124   0   A35   .00
    3434   55C     .0        .00      85.6     71.49   0       0.   .00000      .00   .00        0.  124  99   A35   .00
    3434   56C    36.8      12.59     122.4     83.93   1    1926.   .04616      .00   .00        0.  124  30   A35   .01
    3434   57D     4.4       6.71       4.4      6.71   1     509.   .12065      .00   .00        0.  124   7   A35   .01
    3434   58D     7.8       5.82      12.2     11.55   1     978.   .06881      .00   .00        0.  124  14   A34   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   59C  TC 1170 QC    67.30 QCD    72.97 QD     5.67    3434   59D  TD 1164 QD     8.91 QDC    49.99 QC    41.08   *
*                              3434   59CD TCD 1170 QCD    72.97 QC    67.30 QD     5.67                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   59CD   12.2       8.91     134.6     72.97   0       0.   .00000      .00   .00        0.  124   0   A34   .00
    3434   60C     .0        .00     134.6     72.97   0       0.   .00000      .00   .00        0.  124  99   A34   .00
    3434   61C     8.4      10.79     143.0     73.54   1     470.   .07090      .00   .00        0.  124   8   A34   .01
    3434   62D     3.8       5.79       3.8      5.79   1     485.   .09748      .00   .00        0.  124   7   A35   .01
    3434   63D     7.3       6.39      11.1     10.94   1     744.   .04248      .00   .00        0.  124  12   A34   .01
    3434   64D     7.6       5.67      18.7     12.31   1     871.   .04806      .00   .00        0.  124  14   A34   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   65C  TC 1171 QC    73.05 QCD    82.50 QD     9.45    3434   65D  TD 1168 QD    10.31 QDC    75.00 QC    64.69   *
*                              3434   65CD TCD 1171 QCD    82.50 QC    73.05 QD     9.45                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   65CD   18.7      10.31     161.7     82.50   0       0.   .00000      .00   .00        0.  124   0   A34   .00

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     4
                                   LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                          PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                  STORM DAY 4
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   66C     .0        .00     161.7     82.50   0       0.   .00000      .00   .00        0.  124  99   A34   .00
    3434   67C    22.2      19.43     183.9     84.08   1     693.   .05228      .00   .00        0.  124  12   A34   .01
    3434   68C    26.7      15.24     210.6     84.19   1     827.   .02618      .00   .00        0.  124  17   A33   .01
    3434   69D     8.2      12.50       8.2     12.50   1     547.   .18618      .00   .00        0.  124   7   A35   .01
    3434   70D    17.8      19.98      26.0     30.50   1     780.   .10566      .00   .00        0.  124  10   A35   .01
    3434   71D    19.7      17.25      45.7     43.04   1     878.   .09542      .00   .00        0.  124  12   A34   .01
    3434   72D    23.1      13.29      68.8     51.95   1    1089.   .04589      .00   .00        0.  124  18   A34   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   73C  TC 1179 QC    80.54 QCD    95.87 QD    15.33    3434   73D  TD 1166 QD    45.51 QDC    99.26 QC    53.75   *
*                              3434   73CD TCD 1166 QCD    99.26 QC    53.75 QD    45.51                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   73CD   68.8      45.51     279.4     99.26   0       0.   .00000      .00   .00        0.  124   0   A33   .00
    3434   74C     .0        .00     279.4     99.26   0       0.   .00000      .00   .00        0.  124  99   A33   .00
    3434   75C    41.8      27.44     321.2    107.57   1     822.   .03894      .00   .00        0.  124  15   A33   .01
    3434   76C    40.5      21.45     361.7    109.83   1     823.   .03639      .00   .00        0.  124  17   A32   .01
    3434   77C    46.9      18.47     408.6    116.53   1     987.   .03718      .00   .00        0.  124  22   A32   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   78B  TB 1340 QB    13.20 QBC    23.17 QC     9.97    3434   78C  TC 1174 QC   113.52 QCB   117.83 QB     4.31   *
*                              3434   78BC TBC 1174 QBC   117.83 QB     4.31 QC   113.52                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
```

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    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   78BC  408.6     113.52     569.9    117.83   0       0.   .00000      .00   .00        0.  124   0   A31   .00
    3434   79B      .0        .00     569.9    117.83   0       0.   .00000      .00   .00        0.  124  99   A31   .00
    3434   80B      .0        .00     569.9    117.83   2    1062.   .00515      .00   .00        0.  124   5   A32   .00
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   81A  TA 1179 QA   192.88 QAB   303.59 QB   110.70    3434   81B  TB 1182 QB   112.86 QBA   295.02 QA   182.16   *
*                                3434   81AB TAB 1179 QAB   303.59 QA   192.88 QB   110.70                                  *
*****************************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   81AB  569.9     112.86     904.1    303.59   0       0.   .00000      .00   .00        0.  124   0   A32   .00
    3434   82A      .0        .00     904.1    303.59   0       0.   .00000      .00   .00        0.  124  99   A32   .00
    3434   83A      .0        .00     904.1    303.59   2     608.   .00419      .00   .00        0.  124   5   A32   .00
    3434   84B    10.9      19.47      10.9     19.47   1     695.   .22258      .00   .00        0.  134   7   A35   .01
    3434   85B    31.5      27.10      42.4     45.31   1    1282.   .18903      .00   .00        0.  124  13   A35   .01
    3434   86B    33.8      16.30      76.2     57.58   1    1379.   .07518      .00   .00        0.  124  21   A34   .01
    3434   87B    18.2      26.35      94.4     52.16   1     446.   .07018      .00   .00        0.  124   7   A34   .01
    3434   88B    10.2      10.82     104.6     52.34   1     622.   .05015      .00   .00        0.  124  10   A34   .01
    3434   89C     8.8      14.59       8.8     14.59   1     447.   .12846      .00   .00        0.  124   6   A34   .01
    3434   90C    11.4       7.45      20.2     20.73   1    1104.   .06474      .00   .00        0.  124  16   A34   .01

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     5
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                          PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                STORM DAY 4
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   91B  TB 1170 QB    50.86 QBC    59.51 QC     8.65    3434   91C  TC 1162 QC    14.75 QCB    52.63 QB    37.88   *
*                                3434   91BC TBC 1169 QBC    60.08 QB    50.56 QC     9.52                                  *
*****************************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   91BC   20.2      14.75     124.8     60.08   0       0.   .00000      .00   .00        0.  124   0   A33   .00
    3434   92B      .0        .00     124.8     60.08   0       0.   .00000      .00   .00        0.  124  99   A33   .00
    3434   93B    12.0       9.82     136.8     61.82   1     636.   .04617      .00   .00        0.  124  12   A33   .01
    3434   94B     8.3       6.24     145.1     60.68   1     698.   .03287      .00   .00        0.  124  13   A33   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   95A  TA 1183 QA   298.40 QAB   343.66 QB    45.26    3434   95B  TB 1175 QB    59.42 QBA   238.62 QA   179.20   *
*                                3434   95AB TAB 1182 QAB   345.04 QA   297.11 QB    47.93                                  *
*****************************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   95AB  145.1      59.42    1049.2    345.04   0       0.   .00000      .00   .00        0.  124   0   A32   .00
    3434   96A      .0        .00    1049.2    345.04   0       0.   .00000      .00   .00        0.  124  99   A32   .00
    3434   97B    13.5      12.59      13.5     12.59   1    1005.   .11865      .00   .00        0.  124  12   A35   .01
    3434   98B    10.3      10.93      23.8     18.60   1     847.   .17020      .00   .00        0.  124  10   A34   .01
    3434   99C    10.7       9.37      10.7      9.37   1     973.   .16410      .00   .00        0.  124  12   A34   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  100B  TB 1161 QB    17.17 QBC    25.46 QC     8.28    3434  100C  TC 1160 QC     8.34 QCB    25.38 QB    17.04   *
*                                3434  100BC TBC 1161 QBC    25.46 QB    17.17 QC     8.28                                  *
*****************************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  100BC   10.7       8.34      34.5     25.46   0       0.   .00000      .00   .00        0.  124   0   A34   .00
    3434  101B      .0        .00      34.5     25.46   0       0.   .00000      .00   .00        0.  124  99   A34   .00
    3434  102B    18.5      12.09      53.0     36.19   1    1192.   .10191      .00   .00        0.  124  16   A34   .01
    3434  103C     5.9       6.82       5.9      6.82   1     663.   .14786      .00   .00        0.  124   9   A34   .01
    3434  104C     9.4       6.15      15.3     11.88   1    1306.   .14308      .00   .00        0.  124  16   A34   .01
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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434  105B  TB 1165 QB    33.25 QBC    43.34 QC    10.09    3434  105C  TC 1164 QC    10.19 QCB    43.36 QB    33.17   *
*                                3434  105BC TBC 1164 QBC    43.36 QB    33.17 QC    10.19                                 *
*****************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  105BC    15.3      10.19      68.3     43.36   0       0.   .00000      .00   .00        0.  124   0   A33   .00
    3434  106B      .0        .00      68.3     43.36   0       0.   .00000      .00   .00        0.  124  99   A33   .00
    3434  107B     8.1       6.09      76.4     44.72   1     727.   .04132      .00   .00        0.  124  13   A33   .01
    3434  108C     9.1       8.20       9.1      8.20   1     852.   .18345      .00   .00        0.  124  11   A33   .01

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     6
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                          STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  109C    17.1       7.61      26.2     14.74   1    1098.   .04577      .00   .00        0.  124  21   A33   .01
*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434  110B  TB 1168 QB    42.64 QBC    54.83 QC    12.19    3434  110C  TC 1168 QC    12.19 QCB    54.83 QB    42.64   *
*                                3434  110BC TBC 1168 QBC    54.83 QB    42.64 QC    12.19                                 *
*****************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  110BC    26.2      12.19     102.6     54.83   0       0.   .00000      .00   .00        0.  124   0   A33   .00
    3434  111B      .0        .00     102.6     54.83   0       0.   .00000      .00   .00        0.  124  99   A33   .00
    3434  112B    28.0      18.39     130.6     57.23   1     775.   .05071      .00   .00        0.  124  14   A32   .01
    3434  113B      .0        .00     130.6     55.71   2     415.   .00118      .00   .00        0.  124   5   A32   .00
    3434  114C    13.3       9.93      13.3      9.93   1    1112.   .10691      .00   .00        0.  124  14   A34   .01
    3434  115C    11.8       5.59      25.1     13.30   1    1067.   .04766      .00   .00        0.  124  20   A33   .01
*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434  116B  TB 1178 QB    51.62 QBC    59.60 QC     7.98    3434  116C  TC 1170 QC    11.57 QCB    46.57 QB    34.99   *
*                                3434  116BC TBC 1177 QBC    59.80 QB    51.19 QC     8.61                                 *
*****************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  116BC    25.1      11.57     155.7     59.80   0       0.   .00000      .00   .00        0.  124   0   A32   .00
    3434  117B      .0        .00     155.7     59.80   0       0.   .00000      .00   .00        0.  124  99   A32   .00
    3434  118B      .0        .00     155.7     59.80   2     375.   .01553      .00   .00        0.  124   5   A32   .00
*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434  119A  TA 1182 QA   345.04 QAB   402.01 QB    56.97    3434  119B  TB 1179 QB    59.54 QBA   383.56 QA   324.02   *
*                                3434  119AB TAB 1182 QAB   402.01 QA   345.04 QB    56.97                                 *
*****************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  119AB   155.7      59.54    1204.9    402.01   0       0.   .00000      .00   .00        0.  124   0   A32   .00
    3434  120A      .0        .00    1204.9    402.01   0       0.   .00000      .00   .00        0.  124  99   A32   .00
    3434  121A    44.5      11.90    1249.4    405.72   2    1175.   .02650      .00   .00        0.  124  30   A32   .01
    3434  122A    42.8      10.38    1292.2    405.61   2    1241.   .02035      .00   .00        0.  124  30   A31   .01
    3434  123A    32.0       6.95    1324.2    402.72   2    1373.   .02016      .00   .00        0.  124  30   A30   .01
    3434  124A    18.9       6.44    1343.1    398.52   2    1307.   .01659      .00   .00        0.  134  30   A30   .01
    3434  125B    28.2      20.11      28.2     20.11   2     466.   .02054      .00   .00        0.  124  12   A31   .01
    3434  126B    32.8       7.12      61.0     26.47   2    1355.   .02192      .00   .00        0.  124  30   A30   .01
    3434  127B    24.5       5.32      85.5     27.51   2    1234.   .01824      .00   .00        0.  124  30   A30   .01
    3434  128B    14.5       4.49     100.0     28.03   2    1328.   .01370      .00   .00        0.  134  30   A29   .01

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     7
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M
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Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

LOCATION	SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
CONFLUENCE Q'S														
3434 129A TA 1193 QA	393.01 QAB	408.45 QB	15.44	3434 129B TB 1179 QB	25.29 QBA	206.16 QA	180.87							
3434 129AB TAB 1193 QAB	408.45 QA	393.01 QB	15.44											
3434 129AB	100.0	25.29	1443.1	408.45	0	0.	.00000	.00	.00	0.	134	0	A29	.00
3434 130A	.0	.00	1443.1	408.45	0	0.	.00000	.00	.00	0.	134	99	A29	.00
3434 131A	15.9	4.93	1459.0	409.16	2	1094.	.01054	.00	.00	0.	134	30	A29	.01
3434 132B	11.4	39.52	11.4	39.52	1	735.	.17363	.00	.00	0.	120	5	A39	.01
3434 133B	12.4	38.09	23.8	70.53	1	834.	.16660	.00	.00	0.	120	6	A39	.01
3434 134C	24.0	83.20	24.0	83.20	1	790.	.26598	.00	.00	0.	120	5	A39	.01
CONFLUENCE Q'S														
3434 135B TB 1156 QB	66.58 QBC	130.90 QC	64.33	3434 135C TC 1154 QC	75.02 QCB	127.00 QB	51.98							
3434 135BC TBC 1155 QBC	136.17 QB	61.91 QC	74.26											
3434 135BC	24.0	75.02	47.8	136.17	0	0.	.00000	.00	.00	0.	120	0	A39	.00
3434 136B	.0	.00	47.8	136.17	0	0.	.00000	.00	.00	0.	120	99	A39	.00
3434 137B	6.3	21.13	54.1	150.92	1	732.	.14393	.00	.00	0.	120	5	A38	.01
3434 138C	5.4	18.11	5.4	18.11	1	370.	.25467	.00	.00	0.	120	5	A38	.01
3434 139C	20.7	61.49	26.1	78.01	1	960.	.22406	.00	.00	0.	120	6	A38	.01
CONFLUENCE Q'S														
3434 140B TB 1156 QB	144.88 QBC	217.62 QC	72.73	3434 140C TC 1155 QC	73.10 QCB	206.66 QB	133.56							
3434 140BC TBC 1156 QBC	217.62 QB	144.88 QC	72.73											
3434 140BC	26.1	73.10	80.2	217.62	0	0.	.00000	.00	.00	0.	120	0	A38	.00
3434 141B	.0	.00	80.2	217.62	0	0.	.00000	.00	.00	0.	120	99	A38	.00
3434 142B	9.4	27.92	89.6	236.78	1	786.	.15274	.00	.00	0.	120	6	A38	.01
3434 143C	7.2	24.14	7.2	24.14	1	471.	.34390	.00	.00	0.	120	5	A38	.01
3434 144C	9.9	26.63	17.1	48.92	1	956.	.14850	.00	.00	0.	120	7	A38	.01
CONFLUENCE Q'S														
3434 145B TB 1157 QB	230.24 QBC	274.76 QC	44.52	3434 145C TC 1157 QC	44.52 QCB	274.76 QB	230.24							
3434 145BC TBC 1157 QBC	274.76 QB	230.24 QC	44.52											
3434 145BC	17.1	44.52	106.7	274.76	0	0.	.00000	.00	.00	0.	120	0	A37	.00
3434 146B	.0	.00	106.7	274.76	0	0.	.00000	.00	.00	0.	120	99	A37	.00

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

LOCATION	SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
3434 147C	14.4	29.32	14.4	29.32	1	748.	.15664	.00	.00	0.	134	7	A38	.01
3434 148C	21.7	48.79	36.1	73.82	1	1601.	.20024	.00	.00	0.	120	9	A37	.01
CONFLUENCE Q'S														
3434 149B TB 1157 QB	274.76 QBC	337.50 QC	62.73	3434 149C TC 1159 QC	69.06 QCB	310.39 QB	241.33							

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*                                3434  149BC TBC 1157 QBC   337.50 QB   274.76 QC    62.73                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  149BC   36.1      69.06     142.8    337.50   0       0.   .00000      .00   .00        0.  120   0   A37   .00
    3434  150B      .0        .00     142.8    337.50   0       0.   .00000      .00   .00        0.  120  99   A37   .00
    3434  151B    31.6     67.12     174.4    399.42   1    1197.   .05390      .00   .00        0.  120  10   A37   .01
    3434  152C     2.8      9.71       2.8      9.71   1     394.   .42203      .00   .00        0.  120   5   A39   .01
    3434  153C     4.8     16.10       7.6     24.15   1     601.   .34336      .00   .00        0.  120   5   A38   .01
    3434  154C     3.1     10.40      10.7     30.70   1     265.   .25332      .00   .00        0.  120   5   A38   .01
    3434  155D     3.2     11.09       3.2     11.09   1     423.   .47522      .00   .00        0.  120   5   A39   .01
    3434  156D     5.6     18.78       8.8     28.05   1     836.   .28165      .00   .00        0.  120   5   A38   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  157C  TC 1155 QC    30.18 QCD    55.71 QD    25.53    3434  157D  TD 1155 QD    25.53 QDC    55.71 QC    30.18   *
*                                3434  157CD TCD 1155 QCD    55.71 QC    30.18 QD    25.53                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  157CD    8.8     25.53      19.5     55.71   0       0.   .00000      .00   .00        0.  120   0   A38   .00
    3434  158C      .0        .00      19.5     55.71   0       0.   .00000      .00   .00        0.  120  99   A38   .00
    3434  159C    17.9     38.02      37.4     93.07   1    1510.   .08547      .00   .00        0.  120  10   A37   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  160B  TB 1160 QB   373.59 QBC   453.37 QC    79.78    3434  160C  TC 1160 QC    79.78 QCB   453.37 QB   373.59   *
*                                3434  160BC TBC 1160 QBC   453.37 QB   373.59 QC    79.78                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  160BC   37.4     79.78     211.8    453.37   0       0.   .00000      .00   .00        0.  120   0   A37   .00
    3434  161B      .0        .00     211.8    453.37   0       0.   .00000      .00   .00        0.  120  99   A37   .00
    3434  162C     8.9     30.85       8.9     30.85   1     314.   .25806      .00   .00        0.  120   5   A39   .01
    3434  163C    13.5     46.80      22.4     74.12   1     562.   .27801      .00   .00        0.  120   5   A39   .01
    3434  164D    12.0     36.86      12.0     36.86   1     979.   .34428      .00   .00        0.  120   6   A39   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  165C  TC 1154 QC    69.84 QCD   101.01 QD    31.16    3434  165D  TD 1155 QD    34.84 QDC   102.84 QC    68.00   *
*                                3434  165CD TCD 1155 QCD   102.84 QC    68.00 QD    34.84                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     9
                                       LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                          STORM DAY 4
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  165CD   12.0     34.84      34.4    102.84   0       0.   .00000      .00   .00        0.  120   0   A38   .00
    3434  166C      .0        .00      34.4    102.84   0       0.   .00000      .00   .00        0.  120  99   A38   .00
    3434  167C    19.3     64.72      53.7    156.78   1     498.   .23254      .00   .00        0.  120   5   A38   .01
    3434  168C    17.2     46.27      70.9    198.80   1     986.   .08379      .00   .00        0.  120   7   A38   .01
    3434  169D    14.3     47.95      14.3     47.95   1     643.   .22906      .00   .00        0.  120   5   A38   .01
    3434  170D    13.9     46.61      28.2     83.58   1     873.   .34344      .00   .00        0.  120   5   A38   .01
    3434  171E    20.1     57.68      20.1     57.68   1     971.   .26201      .00   .00        0.  120   6   A37   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  172D  TD 1155 QD    81.00 QDE   135.64 QE    54.64    3434  172E  TE 1155 QE    54.64 QED   135.64 QD    81.00   *
*                                3434  172DE TDE 1155 QDE   135.64 QD    81.00 QE    54.64                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  172DE   20.1     54.64      48.3    135.64   0       0.   .00000      .00   .00        0.  120   0   A37   .00
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    3434  173D      .0        .00      48.3    135.64   0       0.   .00000      .00   .00        0.  120  99   A37   .00
    3434  174D    16.7      47.92      65.0    176.21   1     777.   .09675      .00   .00        0.  120   6   A37   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  175C  TC 1157 QC   186.67 QCD   354.41 QD   167.74    3434  175D  TD 1157 QD   167.74 QDC   354.41 QC   186.67   *
*                              3434  175CD TCD 1157 QCD   354.41 QC   186.67 QD   167.74                                    *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  175CD   65.0     167.74     135.9    354.41   0       0.   .00000      .00   .00        0.  120   0   A37   .00
    3434  176C      .0        .00     135.9    354.41   0       0.   .00000      .00   .00        0.  120  99   A37   .00
    3434  177C    20.9      50.10     156.8    394.53   1     962.   .05124      .00   .00        0.  120   8   A37   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  178B  TB 1160 QB   453.37 QBC   813.72 QC   360.35    3434  178C  TC 1159 QC   374.94 QCB   815.89 QB   440.95   *
*                              3434  178BC TBC 1159 QBC   815.89 QB   440.95 QC   374.94                                    *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  178BC  156.8     374.94     368.6    815.89   0       0.   .00000      .00   .00        0.  120   0   A37   .00
    3434  179B      .0        .00     368.6    815.89   0       0.   .00000      .00   .00        0.  120  99   A37   .00
    3434  180B    44.1      75.80     412.7    884.49   1    1737.   .04583      .00   .00        0.  120  13   A36   .01
    3434  181C    12.4      35.58      12.4     35.58   1     758.   .14926      .00   .00        0.  120   6   A37   .01
    3434  182C    29.5      64.06      41.9     94.62   1    1406.   .14167      .00   .00        0.  120   9   A36   .01
    3434  183C     4.8      14.51      46.7     90.91   1     581.   .13575      .00   .00        0.  120   5   A35   .01
    3434  184D     6.3      15.43       6.3     15.43   1     534.   .21299      .00   .00        0.  134   5   A36   .01
    3434  185D    10.5      25.35      16.8     38.35   1     869.   .15477      .00   .00        0.  120   7   A35   .01

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE    10
                                   LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                        PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  186C  TC 1160 QC    89.79 QCD   115.22 QD    25.44    3434  186D  TD 1157 QD    35.27 QDC   114.91 QC    79.63   *
*                              3434  186CD TCD 1158 QCD   119.81 QC    86.23 QD    33.58                                   *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  186CD   16.8      35.27      63.5    119.81   0       0.   .00000      .00   .00        0.  120   0   A35   .00
    3434  187C      .0        .00      63.5    119.81   0       0.   .00000      .00   .00        0.  120  99   A35   .00
    3434  188C    11.1      29.61      74.6    130.22   1     695.   .12975      .00   .00        0.  120   6   A35   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  189B  TB 1163 QB   819.33 QBC   925.48 QC   106.14    3434  189C  TC 1159 QC   128.84 QCB   681.56 QB   552.72   *
*                              3434  189BC TBC 1163 QBC   925.48 QB   819.33 QC   106.14                                    *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  189BC   74.6     128.84     487.3    925.48   0       0.   .00000      .00   .00        0.  120   0   A35   .00
    3434  190B      .0        .00     487.3    925.48   0       0.   .00000      .00   .00        0.  120  99   A35   .00
    3434  191B    29.5      54.53     516.8    944.34   1    1284.   .03833      .00   .00        0.  120  11   A35   .01
    3434  192B    24.3      52.29     541.1    912.30   1     820.   .04418      .00   .00        0.  120   8   A34   .01
    3434  193B    19.7      28.09     560.8    900.48   1     739.   .06758      .00   .00        0.  134   9   A34   .01
    3434  194B    33.6      30.03     594.4    894.38   1    1446.   .09519      .00   .00        0.  134  15   A33   .01
    3434  195B    16.6      23.18     611.0    880.16   1     427.   .03615      .00   .00        0.  134   8   A32   .01
    3434  196B    20.7      15.52     631.7    875.48   1    1191.   .03815      .00   .00        0.  134  17   A32   .01
    3434  197B    24.1      20.39     655.8    851.89   1    1124.   .04581      .00   .00        0.  134  15   A32   .01
    3434  198C    11.4      22.31      11.4     22.31   1     758.   .22878      .00   .00        0.  134   7   A37   .01
    3434  199C    32.2      69.93      43.6     88.43   1    1279.   .11163      .00   .00        0.  120   9   A36   .01
    3434  200D    12.2      30.61      12.2     30.61   1     880.   .09513      .00   .00        0.  120   7   A36   .01
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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434  201C  TC 1159 QC    83.04 QCD   108.45 QD    25.40    3434  201D  TD 1157 QD    27.41 QDC   105.77 QC    78.37   *
*                                3434  201CD TCD 1158 QCD   109.56 QC    82.32 QD    27.24                                 *
*****************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  201CD    12.2      27.41      55.8    109.56   0       0.   .00000      .00   .00        0.  120   0   A36   .00
    3434  202C      .0        .00      55.8    109.56   0       0.   .00000      .00   .00        0.  120  99   A36   .00
    3434  203C    36.4      30.88      92.2    139.85   1    1845.   .07014      .00   .00        0.  134  18   A35   .01
    3434  204D    13.1      21.25      13.1     21.25   1     697.   .12502      .00   .00        0.  134   8   A35   .01
    3434  205D     6.6       9.86      19.7     28.60   1     884.   .13023      .00   .00        0.  134   9   A35   .01

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE    11
                                      LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                      STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434  206C  TC 1164 QC   122.03 QCD   139.13 QD    17.10    3434  206D  TD 1160 QD    26.10 QDC   122.15 QC    96.06   *
*                                3434  206CD TCD 1163 QCD   141.59 QC   121.54 QD    20.05                                 *
*****************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  206CD    19.7      26.10     111.9    141.59   0       0.   .00000      .00   .00        0.  134   0   A35   .00
    3434  207C      .0        .00     111.9    141.59   0       0.   .00000      .00   .00        0.  134  99   A35   .00
    3434  208C    39.9      45.19     151.8    162.06   1    1295.   .12816      .00   .00        0.  134  12   A34   .01
    3434  209D    10.3      15.39      10.3     15.39   1     809.   .11707      .00   .00        0.  134   9   A35   .01
    3434  210D     5.2      10.48      15.5     18.32   1     575.   .15612      .00   .00        0.  134   6   A35   .01
    3434  211E     4.5       9.07       4.5      9.07   1     454.   .08222      .00   .00        0.  134   6   A35   .01
    3434  212E     3.0       5.36       7.5     12.05   1     676.   .14919      .00   .00        0.  134   7   A35   .01
*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434  213D  TD 1158 QD    17.78 QDE    28.42 QE    10.63    3434  213E  TE 1159 QE    10.72 QED    28.11 QD    17.39   *
*                                3434  213DE TDE 1158 QDE    28.42 QD    17.78 QE    10.63                                 *
*****************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  213DE     7.5      10.72      23.0     28.42   0       0.   .00000      .00   .00        0.  134   0   A34   .00
    3434  214D      .0        .00      23.0     28.42   0       0.   .00000      .00   .00        0.  134  99   A34   .00
    3434  215D     5.6       9.58      28.6     32.73   1     658.   .17232      .00   .00        0.  134   7   A34   .01
*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434  216C  TC 1164 QC   156.83 QCD   179.69 QD    22.87    3434  216D  TD 1159 QD    31.92 QDC   135.93 QC   104.01   *
*                                3434  216CD TCD 1164 QCD   179.69 QC   156.83 QD    22.87                                 *
*****************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  216CD    28.6      31.92     180.4    179.69   0       0.   .00000      .00   .00        0.  134   0   A34   .00
    3434  217C      .0        .00     180.4    179.69   0       0.   .00000      .00   .00        0.  134  99   A34   .00
    3434  218C    21.6      19.30     202.0    193.09   1    1364.   .08413      .00   .00        0.  134  15   A33   .01
    3434  219D     6.4       9.13       6.4      9.13   1     797.   .11968      .00   .00        0.  134   9   A34   .01
    3434  220D    14.1      15.12      20.5     21.38   1    1230.   .16411      .00   .00        0.  134  12   A33   .01
*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434  221C  TC 1166 QC   184.62 QCD   199.42 QD    14.79    3434  221D  TD 1162 QD    20.02 QDC   163.42 QC   143.41   *
*                                3434  221CD TCD 1166 QCD   199.42 QC   184.62 QD    14.79                                 *
*****************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  221CD    20.5      20.02     222.5    199.42   0       0.   .00000      .00   .00        0.  134   0   A33   .00
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     3434  222C      .0        .00     222.5    199.42   0       0.   .00000      .00   .00        0.  134  99   A33   .00
     3434  223C    35.3      23.08     257.8    216.43   1    1772.   .06488      .00   .00        0.  134  21   A33   .01

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE    12
                                       LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M

     Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                  STORM DAY 4
                    SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
     LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434  224B  TB 1176 QB   835.32 QBC  1000.99 QC   165.67    3434  224C  TC 1171 QC   202.93 QCB   752.95 QB   550.02   *
 *                              3434  224BC TBC 1176 QBC  1000.99 QB   835.32 QC   165.67                                 *
 ***********************************************************************************************************************
                    SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
     LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     3434  224BC   257.8     202.93     913.6   1000.99   0       0.   .00000      .00   .00        0.  134   0   A32   .00
     3434  225B      .0        .00     913.6   1000.99   0       0.   .00000      .00   .00        0.  134  99   A32   .00
     3434  226B    11.5      12.62     925.1   1001.63   1     516.   .01723      .00   .00        0.  134  11   A32   .01
     3434  227B    23.2      23.55     948.3    992.20   1     852.   .04396      .00   .00        0.  134  12   A32   .01
     3434  228C     7.8       7.92       7.8      7.92   1     876.   .05328      .00   .00        0.  134  12   A32   .01
     3434  229C    23.6      18.79      31.4     22.10   1    1228.   .05537      .00   .00        0.  134  16   A32   .01
     3434  230C    58.0      40.90      89.4     50.70   1    1154.   .05086      .00   .00        0.  134  17   A31   .01
     3434  231C      .0        .00      89.4     48.30   2    1615.   .00324      .00   .00        0.  134   5   A31   .00
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434  232B  TB 1179 QB   984.91 QBC  1016.58 QC    31.67    3434  232C  TC 1182 QC    33.12 QCB   952.32 QB   919.20   *
 *                              3434  232BC TBC 1179 QBC  1016.58 QB   984.91 QC    31.67                                 *
 ***********************************************************************************************************************
                    SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
     LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     3434  232BC    89.4      33.12    1037.7   1016.58   0       0.   .00000      .00   .00        0.  134   0   A32   .00
     3434  233B      .0        .00    1037.7   1016.58   0       0.   .00000      .00   .00        0.  134  99   A32   .00
     3434  234C    17.4      42.61      17.4     42.61   1     451.   .22146      .00   .00        0.  134   5   A36   .01
     3434  235C    37.2      44.38      54.6     83.02   1    1305.   .13026      .00   .00        0.  134  12   A35   .01
     3434  236C    11.1      13.62      65.7     82.86   1     728.   .12373      .00   .00        0.  124   9   A35   .01
     3434  237D    13.4      27.01      13.4     27.01   1     644.   .25345      .00   .00        0.  134   6   A35   .01
     3434  238D    20.9      23.33      34.3     49.04   1    1522.   .16398      .00   .00        0.  134  13   A35   .01
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434  239C  TC 1159 QC    79.38 QCD   121.07 QD    41.69    3434  239D  TD 1159 QD    41.69 QDC   121.07 QC    79.38   *
 *                              3434  239CD TCD 1159 QCD   121.07 QC    79.38 QD    41.69                                 *
 ***********************************************************************************************************************
                    SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
     LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     3434  239CD    34.3      41.69     100.0    121.07   0       0.   .00000      .00   .00        0.  124   0   A35   .00
     3434  240C      .0        .00     100.0    121.07   0       0.   .00000      .00   .00        0.  124  99   A35   .00
     3434  241C    28.0      24.51     128.0    141.21   1     920.   .08614      .00   .00        0.  124  12   A34   .01
     3434  242C    11.1       7.78     139.1    139.62   1     991.   .06669      .00   .00        0.  124  15   A34   .01
     3434  243D     6.9      10.31       6.9     10.31   1     976.   .21128      .00   .00        0.  134   9   A35   .01
     3434  244D    16.5      10.79      23.4     19.43   1    1268.   .11406      .00   .00        0.  124  16   A34   .01

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE    13
                                       LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M

     Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                  STORM DAY 4
                    SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
     LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434  245C  TC 1165 QC   130.26 QCD   147.20 QD    16.93    3434  245D  TD 1164 QD    17.23 QDC   145.07 QC   127.84   *
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*                                3434  245CD TCD 1165 QCD   147.20 QC   130.26 QD    16.93                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  245CD   23.4      17.23     162.5    147.20   0       0.   .00000      .00   .00        0.  124   0   A33   .00
    3434  246C      .0        .00     162.5    147.20   0       0.   .00000      .00   .00        0.  124  99   A33   .00
    3434  247C     2.3      3.63     164.8    147.37   1     278.   .03741      .00   .00        0.  124   6   A33   .01
    3434  248D     6.3     12.12       6.3     12.12   1     511.   .18583      .00   .00        0.  134   6   A34   .01
    3434  249D    12.7      8.34      19.0     19.51   1     937.   .06685      .00   .00        0.  124  15   A33   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  250C  TC 1166 QC   145.72 QCD   157.13 QD    11.41    3434  250D  TD 1161 QD    15.30 QDC    84.49 QC    69.18   *
*                                3434  250CD TCD 1166 QCD   157.13 QC   145.72 QD    11.41                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  250CD   19.0      15.30     183.8    157.13   0       0.   .00000      .00   .00        0.  124   0   A33   .00
    3434  251C      .0        .00     183.8    157.13   0       0.   .00000      .00   .00        0.  124  99   A33   .00
    3434  252C    24.0      12.87     207.8    164.98   1    1074.   .05993      .00   .00        0.  124  18   A33   .01
    3434  253C    23.1      10.73     230.9    157.96   1    1029.   .05778      .00   .00        0.  124  19   A32   .01
    3434  254C      .0        .00     230.9    149.66   2     982.   .00738      .00   .00        0.  124   5   A32   .00
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  255B  TB 1179 QB  1016.58 QBC  1151.40 QC   134.81    3434  255C  TC 1178 QC   136.36 QCB  1137.52 QB  1001.16   *
*                                3434  255BC TBC 1179 QBC  1151.40 QB  1016.58 QC   134.81                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  255BC  230.9     136.36    1268.6   1151.40   0       0.   .00000      .00   .00        0.  134   0   A32   .00
    3434  256B      .0        .00    1268.6   1151.40   0       0.   .00000      .00   .00        0.  134  99   A32   .00
    3434  257B    13.3       5.12    1281.9   1152.20   2     824.   .02933      .00   .00        0.  124  21   A31   .01
    3434  258B    16.8       4.08    1298.7   1147.57   2    1135.   .02646      .00   .00        0.  124  30   A31   .01
    3434  259C    24.1       7.18      24.1      7.18   2     920.   .02640      .00   .00        0.  124  26   A31   .01
    3434  260C    32.3       7.84      56.4     14.20   2    1488.   .02019      .00   .00        0.  124  30   A31   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  261B  TB 1182 QB  1138.10 QBC  1148.49 QC    10.38    3434  261C  TC 1172 QC    13.05 QCB   466.36 QB   453.30   *
*                                3434  261BC TBC 1182 QBC  1148.49 QB  1138.10 QC    10.38                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  261BC   56.4      13.05    1355.1   1148.49   0       0.   .00000      .00   .00        0.  124   0   A31   .00
    3434  262B      .0        .00    1355.1   1148.49   0       0.   .00000      .00   .00        0.  124  99   A31   .00

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE    14
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                          STORM DAY 4
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  263B    32.4      22.85    1387.5   1150.14   2     941.   .02198      .00   .00        0.  134  17   A31   .01
    3434  264B    28.5      14.99    1416.0   1144.31   2    1030.   .01678      .00   .00        0.  134  21   A30   .01
    3434  265B    22.1       6.85    1438.1   1136.04   2    1135.   .01228      .00   .00        0.  134  30   A29   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  266A  TA 1197 QA   403.60 QAB  1180.01 QB   776.41    3434  266B  TB 1187 QB  1118.78 QBA  1381.97 QA   263.19   *
*                                3434  266AB TAB 1189 QAB  1402.51 QA   303.12 QB  1099.39                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  266AB 1438.1    1118.78    2897.1   1402.51   0       0.   .00000      .00   .00        0.  134   0   A29   .00
    3434  267A      .0        .00    2897.1   1402.51   0       0.   .00000      .00   .00        0.  134  99   A29   .00
    3434  268A    17.9      10.26    2915.0   1403.26   2     780.   .01503      .00   .00        0.  134  18   A29   .01
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    3434  269A    11.9       4.30    2926.9   1400.22   2     802.   .01032      .00   .00        0.  134  25   A28   .01
    3434  270A     9.7       2.99    2936.6   1395.50   2     825.   .00925      .00   .00        0.  134  28   A28   .01
    3434  271B    10.1       5.46      10.1      5.46   2     859.   .01874      .00   .00        0.  134  19   A29   .01
    3434  272B     9.7       2.99      19.8      7.52   2     903.   .01251      .00   .00        0.  134  28   A28   .01
    3434  273B     6.5       1.80      26.3      7.96   2     906.   .01128      .00   .00        0.  134  30   A28   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  274A  TA 1194 QA  1389.48 QAB  1393.77 QB     4.28    3434  274B  TB 1179 QB     7.33 QBA   345.23 QA   337.90   *
*                                3434  274AB TAB 1194 QAB  1393.77 QA  1389.48 QB     4.28                                  *
*****************************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  274AB    26.3       7.33    2962.9   1393.77   0       0.   .00000      .00   .00        0.  134   0   A28   .00
    3434  275A      .0        .00    2962.9   1393.77   0       0.   .00000      .00   .00        0.  134  99   A28   .00
    3434  276A    17.8       4.38    2980.7   1394.49   2     946.   .00816      .00   .00        0.  134  30   A27   .01
    3434  277B    18.9      21.33      18.9     21.33   2     511.   .02970      .00   .00        0.  134  10   A31   .01
    3434  278B    24.6      15.54      43.5     35.73   2    1102.   .02872      .00   .00        0.  134  19   A31   .01
    3434  279B    17.5       9.20      61.0     41.13   2    1029.   .01909      .00   .00        0.  134  21   A30   .01
    3434  280B    15.9       8.60      76.9     43.48   2     877.   .01892      .00   .00        0.  134  19   A29   .01
    3434  281B    10.2       4.92      87.1     43.73   2     879.   .01649      .00   .00        0.  134  21   A29   .01
    3434  282C    12.9      15.70      12.9     15.70   2     576.   .04679      .00   .00        0.  134   9   A31   .01
    3434  283C    32.9      21.57      45.8     36.47   2     991.   .03481      .00   .00        0.  134  17   A30   .01
    3434  284C    47.3      22.32      93.1     56.01   2    1210.   .02430      .00   .00        0.  134  23   A30   .01
    3434  285C    33.7      10.44     126.8     61.97   2    1332.   .01584      .00   .00        0.  134  30   A29   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  286B  TB 1173 QB    41.09 QBC    96.39 QC    55.30    3434  286C  TC 1171 QC    56.97 QCB    95.64 QB    38.67   *
*                                3434  286BC TBC 1172 QBC    96.83 QB    40.37 QC    56.46                                 *
*****************************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  286BC   126.8      96.37     213.9     96.83   0       0.   .00000      .00   .00        0.  134   0   A29   .00
    3434  287B      .0        .00     213.9     96.83   0       0.   .00000      .00   .00        0.  134  99   A29   .00

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE    15
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                STORM DAY 4
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  288B    29.9       8.28     243.8    101.90   2    1107.   .01108      .00   .00        0.  134  30   A28   .01
    3434  289B    13.5       3.32     257.3     98.31   2    1240.   .01137      .00   .00        0.  134  30   A27   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  290A  TA 1196 QA  1386.30 QAB  1442.57 QB    56.28    3434  290B  TB 1183 QB    93.01 QBA   463.45 QA   370.44   *
*                                3434  290AB TAB 1196 QAB  1442.57 QA  1386.30 QB    56.28                                 *
*****************************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  290AB   257.3      93.01    3238.0   1442.57   0       0.   .00000      .00   .00        0.  124   0   A27   .00
    3434  291A      .0        .00    3238.0   1442.57   0       0.   .00000      .00   .00        0.  124  99   A27   .00
    3434  292A    12.5       1.87    3250.5   1443.07   2     574.   .00764      .00   .00        0.  124  30   A27   .01
    3434  293B    13.7      10.87      13.7     10.87   2     509.   .01888      .00   .00        0.  134  12   A28   .01
    3434  294B    17.9       4.40      31.6     14.55   2    1306.   .01031      .00   .00        0.  134  30   A27   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  295A  TA 1197 QA  1438.57 QAB  1441.18 QB     2.61    3434  295B  TB 1170 QB    10.81 QBA   247.85 QA   237.04   *
*                                3434  295AB TAB 1197 QAB  1441.18 QA  1438.57 QB     2.61                                  *
*****************************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  295AB    31.6      10.81    3282.1   1441.18   0       0.   .00000      .00   .00        0.  124   0   A27   .00
    3434  296A      .0        .00    3282.1   1441.18   0       0.   .00000      .00   .00        0.  124  99   A27   .00
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    3434  297A    21.5       3.10    3303.6   1441.98   2     953.   .00922      .00   .00        0.  124  30   A26   .01
    3434  298A    20.9       3.01    3324.5   1434.23   2    1287.   .00669      .00   .00        0.  124  30   A26   .01
    3434  299B    19.9      36.77      19.9     36.77   2     218.   .05244      .00   .00        0.  134   5   A30   .01
    3434  300B    20.8      13.64      40.7     47.21   2     911.   .02399      .00   .00        0.  134  17   A30   .01
    3434  301B    15.2       7.32      55.9     45.33   2     996.   .02184      .00   .00        0.  134  21   A29   .01
    3434  302B    23.8      10.33      79.7     48.43   2    1063.   .02137      .00   .00        0.  134  23   A29   .01
    3434  303B    33.5       9.28     113.2     51.77   2    1128.   .02022      .00   .00        0.  134  30   A28   .01
    3434  304B    29.8       7.33     143.0     52.71   2    1263.   .01375      .00   .00        0.  134  30   A27   .01
    3434  305B    16.4       2.45     159.4     50.15   2    1074.   .01102      .00   .00        0.  124  30   A27   .01
    3434  306B     9.8       1.41     169.2     47.72   2    1388.   .01052      .00   .00        0.  124  30   A26   .01
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                      *
 *   3434  307A  TA 1203 QA  1411.74 QAB  1445.93 QB    34.19    3434  307B  TB 1193 QB    43.90 QBA   605.27 QA   561.37   *
 *                                3434  307AB TAB 1203 QAB  1445.93 QA  1411.74 QB    34.19                                 *
 ***********************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  307AB  169.2      43.90    3493.7   1445.93   0       0.   .00000      .00   .00        0.  124   0   A26   .00
    3434  308A      .0        .00    3493.7   1445.93   0       0.   .00000      .00   .00        0.  124  99   A26   .00
    3434  309B    14.2      21.22      14.2     21.22   1     997.   .19466      .00   .00        0.  134   9   A35   .01
    3434  310B    19.5      22.08      33.7     40.13   1    1064.   .06843      .00   .00        0.  134  12   A34   .01
    3434  311B    31.7      26.74      65.4     58.10   1    1522.   .08908      .00   .00        0.  134  16   A33   .01
    3434  312B    20.5      27.74      85.9     54.98   1     902.   .17495      .00   .00        0.  134   9   A33   .01

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE    16
                                   LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                          PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                  STORM DAY 4
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  313B    19.2      14.39     105.1     57.73   1    1385.   .06604      .00   .00        0.  134  17   A32   .01
    3434  314C     6.9      11.24       6.9     11.24   1     688.   .20218      .00   .00        0.  134   7   A33   .01
    3434  315C    13.6      12.16      20.5     22.20   1    1422.   .13507      .00   .00        0.  134  14   A32   .01
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                      *
 *   3434  316B  TB 1171 QB    56.10 QBC    64.18 QC     8.08    3434  316C  TC 1162 QC    18.54 QCB    62.93 QB    44.39   *
 *                                3434  316BC TBC 1165 QBC    67.84 QB    51.10 QC    16.74                                 *
 ***********************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  316BC   20.5      18.54     125.6     67.84   0       0.   .00000      .00   .00        0.  134   0   A32   .00
    3434  317B      .0        .00     125.6     67.84   0       0.   .00000      .00   .00        0.  134  99   A32   .00
    3434  318B    15.9      10.25     141.5     75.69   1    1259.   .03129      .00   .00        0.  134  20   A32   .01
    3434  319C    14.4      18.54      14.4     18.54   1     790.   .18095      .00   .00        0.  134   9   A32   .01
    3434  320C    27.1      21.58      41.5     38.38   1    1072.   .03479      .00   .00        0.  134  16   A32   .01
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                      *
 *   3434  321B  TB 1173 QB    69.44 QBC    86.26 QC    16.82    3434  321C  TC 1164 QC    31.59 QCB    68.62 QB    37.03   *
 *                                3434  321BC TBC 1170 QBC    90.37 QB    66.66 QC    23.72                                 *
 ***********************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  321BC   41.5      31.59     183.0     90.37   0       0.   .00000      .00   .00        0.  134   0   A32   .00
    3434  322B      .0        .00     183.0     90.37   0       0.   .00000      .00   .00        0.  134  99   A32   .00
    3434  323B     8.5       8.14     191.5     90.95   1     605.   .02215      .00   .00        0.  134  12   A31   .01
    3434  324C    11.0      11.17      11.0     11.17   1     936.   .05764      .00   .00        0.  134  12   A32   .01
    3434  325C     9.1       9.39      20.1     14.88   1     726.   .04649      .00   .00        0.  134  11   A31   .01
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                      *
 *   3434  326B  TB 1174 QB    88.91 QBC    96.64 QC     7.72    3434  326C  TC 1164 QC    12.88 QCB    57.31 QB    44.43   *
 *                                3434  326BC TBC 1173 QBC    96.97 QB    88.65 QC     8.32                                 *
 ***********************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
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    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  326BC   20.1      12.88     211.6     96.97   0       0.   .00000      .00   .00        0.  134   0   A31   .00
    3434  327B      .0        .00     211.6     96.97   0       0.   .00000      .00   .00        0.  134  99   A31   .00
    3434  328B    14.4      17.52     226.0     97.80   1     457.   .02623      .00   .00        0.  134   9   A31   .01
    3434  329C     8.1      12.54       8.1     12.54   1     469.   .06235      .00   .00        0.  134   7   A32   .01
    3434  330C    25.8      17.19      33.9     28.22   1    1150.   .04234      .00   .00        0.  134  18   A31   .01
    3434  331C      .0        .00      33.9     22.19   2    1048.   .01371      .00   .00        0.  134   5   A31   .00
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434  332B  TB 1176 QB    96.80 QBC   114.70 QC    17.89    3434  332C  TC 1173 QC    19.12 QCB   111.59 QB    92.48   *
 *                                3434  332BC TBC 1175 QBC   115.05 QB    96.56 QC    18.49                                *
 ***********************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE    17
                                       LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                STORM DAY 4
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  332BC   33.9      19.12     259.9    115.05   0       0.   .00000      .00   .00        0.  134   0   A31   .00
    3434  333B      .0        .00     259.9    115.05   0       0.   .00000      .00   .00        0.  134  99   A31   .00
    3434  334C    13.5      17.93      13.5     17.93   1     909.   .09636      .00   .00        0.  134  10   A34   .01
    3434  335C    17.3      17.32      30.8     30.97   1    1345.   .12900      .00   .00        0.  134  13   A33   .01
    3434  336C    29.6      19.36      60.4     45.20   1    2103.   .10196      .00   .00        0.  134  21   A33   .01
    3434  337D     9.0      11.96       9.0     11.96   1     974.   .12440      .00   .00        0.  134  10   A34   .01
    3434  338D    11.7      14.75      20.7     22.03   1     924.   .13738      .00   .00        0.  134  10   A33   .01
    3434  339D    25.5      20.31      46.2     38.91   1    1753.   .12448      .00   .00        0.  134  17   A33   .01
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434  340C  TC 1170 QC    39.75 QCD    68.85 QD    29.10    3434  340D  TD 1166 QD    35.02 QDC    69.59 QC    34.56   *
 *                                3434  340CD TCD 1168 QCD    71.77 QC    38.61 QD    33.16                                *
 ***********************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  340CD   46.2      35.02     106.6     71.77   0       0.   .00000      .00   .00        0.  134   0   A32   .00
    3434  341C      .0        .00     106.6     71.77   0       0.   .00000      .00   .00        0.  134  99   A32   .00
    3434  342C    39.5      24.09     146.1     87.60   1    1378.   .03394      .00   .00        0.  134  21   A32   .01
    3434  343C    38.2      22.93     184.3     83.28   1    1301.   .03706      .00   .00        0.  134  20   A31   .01
    3434  344C      .0        .00     184.3     79.31   2     603.   .00233      .00   .00        0.  134   5   A31   .00
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434  345B  TB 1175 QB   115.05 QBC   162.78 QC    47.72    3434  345C  TC 1185 QC    75.44 QCB   162.90 QB    87.46   *
 *                                3434  345BC TBC 1180 QBC   171.78 QB   104.78 QC    67.00                                *
 ***********************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  345BC  184.3      75.44     444.2    171.78   0       0.   .00000      .00   .00        0.  134   0   A31   .00
    3434  346B      .0        .00     444.2    171.78   0       0.   .00000      .00   .00        0.  134  99   A31   .00
    3434  347B    26.0      15.27     470.2    173.18   2     993.   .02585      .00   .00        0.  134  19   A30   .01
    3434  348B    13.4       7.05     483.6    173.26   2     974.   .01629      .00   .00        0.  134  21   A30   .01
    3434  349C    15.8      10.36      15.8     10.36   2     895.   .02570      .00   .00        0.  134  17   A30   .01
    3434  350C     9.5       4.48      25.3     13.61   2    1119.   .01846      .00   .00        0.  134  23   A30   .01
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434  351B  TB 1185 QB   172.13 QBC   176.16 QC     4.03    3434  351C  TC 1169 QC    12.25 QCB    93.74 QB    81.49   *
 *                                3434  351BC TBC 1185 QBC   176.16 QB   172.13 QC     4.03                                *
 ***********************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  351BC   25.3      12.25     508.9    176.16   0       0.   .00000      .00   .00        0.  134   0   A29   .00
    3434  352B      .0        .00     508.9    176.16   0       0.   .00000      .00   .00        0.  134  99   A29   .00
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3434	353B	17.8	5.52	526.7	177.18	2	1227.	.02182	.00	.00	0.	134	30	A29	.01
3434	354B	17.8	4.93	544.5	176.79	2	1268.	.01899	.00	.00	0.	134	30	A28	.01
3434	355B	14.7	4.07	559.2	175.99	2	1370.	.01517	.00	.00	0.	134	30	A28	.01
3434	356C	12.2	7.56	12.2	7.56	2	997.	.02874	.00	.00	0.	134	18	A30	.01

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
3434	357C	24.4	13.20	36.6	18.48	2	941.	.02776	.00	.00	0.	134	19	A29	.01
3434	358C	36.6	11.34	73.2	28.29	2	1274.	.02528	.00	.00	0.	134	30	A29	.01
3434	359C	20.6	5.71	93.8	31.35	2	1345.	.01491	.00	.00	0.	134	30	A28	.01

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434  360B  TB 1197 QB   173.85 QBC   184.88 QC    11.03    3434  360C  TC 1176 QC    29.16 QCB   105.69 QB    76.53   *
*                                3434  360BC TBC 1196 QBC   185.26 QB   173.56 QC    11.69                                *
*****************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	360BC	93.8	29.16	653.0	185.26	0	0.	.00000	.00	.00	0.	134	0	A27	.00
3434	361B	.0	.00	653.0	185.26	0	0.	.00000	.00	.00	0.	134	99	A27	.00
3434	362B	23.7	5.83	676.7	186.19	2	1387.	.01266	.00	.00	0.	134	30	A27	.01
3434	363C	16.0	38.26	16.0	38.26	1	706.	.15983	.00	.00	0.	134	6	A39	.01
3434	364C	24.5	45.36	40.5	79.28	1	830.	.10613	.00	.00	0.	134	8	A38	.01
3434	365C	28.0	47.76	68.5	117.13	1	991.	.11641	.00	.00	0.	134	9	A38	.01
3434	366C	18.7	53.66	87.2	126.00	1	793.	.11016	.00	.00	0.	120	6	A37	.01
3434	367D	14.9	29.16	14.9	29.16	1	801.	.23217	.00	.00	0.	134	7	A37	.01
3434	368D	27.8	42.41	42.7	68.06	1	1131.	.13862	.00	.00	0.	134	10	A37	.01

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434  369C  TC 1160 QC   123.37 QCD   184.84 QD    61.47    3434  369D  TD 1159 QD    64.02 QDC   187.40 QC   123.37   *
*                                3434  369CD TCD 1159 QCD   187.40 QC   123.37 QD    64.02                                *
*****************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	369CD	42.7	64.02	129.9	187.40	0	0.	.00000	.00	.00	0.	134	0	A37	.00
3434	370C	.0	.00	129.9	187.40	0	0.	.00000	.00	.00	0.	134	99	A37	.00
3434	371C	26.5	61.42	156.4	221.98	1	996.	.08100	.00	.00	0.	120	8	A36	.01
3434	372C	23.6	65.34	180.0	226.75	1	587.	.03931	.00	.00	0.	120	6	A36	.01
3434	373D	9.2	25.47	9.2	25.47	1	996.	.23413	.00	.00	0.	120	6	A36	.01

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434  374C  TC 1162 QC   224.05 QCD   232.71 QD     8.66    3434  374D  TD 1156 QD    22.90 QDC   179.06 QC   156.16   *
*                                3434  374CD TCD 1161 QCD   234.47 QC   223.30 QD    11.17                                *
*****************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	374CD	9.2	22.90	189.2	234.47	0	0.	.00000	.00	.00	0.	120	0	A36	.00
3434	375C	.0	.00	189.2	234.47	0	0.	.00000	.00	.00	0.	120	99	A36	.00
3434	376C	31.4	62.03	220.6	271.06	1	1257.	.05884	.00	.00	0.	120	10	A35	.01
3434	377C	18.6	23.87	239.2	269.17	1	858.	.05810	.00	.00	0.	134	11	A35	.01
3434	378D	17.5	32.76	17.5	32.76	1	794.	.17368	.00	.00	0.	134	7	A36	.01
3434	379D	25.7	32.98	43.2	62.59	1	1184.	.13713	.00	.00	0.	134	11	A35	.01

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

SUBAREA	SUBAREA	TOTAL	TOTAL	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL	STORM DAY 4 RAIN	PCT

```
   LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  380C  TC 1164 QC   265.04 QCD   301.30 QD    36.26    3434  380D  TD 1159 QD    57.80 QDC   242.53 QC   184.73   *
*                              3434  380CD TCD 1163 QCD   303.54 QC   260.64 QD    42.90                                   *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
   LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
   3434  380CD    43.2      57.80     282.4    303.54   0       0.   .00000      .00   .00        0.  134   0   A35   .00
   3434  381C      .0        .00     282.4    303.54   0       0.   .00000      .00   .00        0.  134  99   A35   .00
   3434  382C    33.6      40.09     316.0    318.12   1    1110.   .05774      .00   .00        0.  134  12   A35   .01
   3434  383C    44.7      42.20     360.7    329.81   1    1444.   .07679      .00   .00        0.  134  15   A34   .01
   3434  384D    14.0      18.60      14.0     18.60   1    1123.   .25901      .00   .00        0.  134  10   A34   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  385C  TC 1167 QC   319.23 QCD   323.69 QD     4.47    3434  385D  TD 1158 QD    17.03 QDC   147.28 QC   130.26   *
*                              3434  385CD TCD 1167 QCD   323.69 QC   319.23 QD     4.47                                   *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
   LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
   3434  385CD    14.0      17.03     374.7    323.69   0       0.   .00000      .00   .00        0.  134   0   A34   .00
   3434  386C      .0        .00     374.7    323.69   0       0.   .00000      .00   .00        0.  134  99   A34   .00
   3434  387C    30.9      26.07     405.6    333.11   1    1502.   .05408      .00   .00        0.  134  17   A34   .01
   3434  388D     7.7      17.24       7.7     17.24   1     477.   .25874      .00   .00        0.  134   5   A34   .01
   3434  389D    18.0      21.99      25.7     37.05   1    1098.   .17341      .00   .00        0.  134  11   A34   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  390C  TC 1171 QC   321.09 QCD   325.21 QD     4.12    3434  390D  TD 1158 QD    33.23 QDC   125.21 QC    91.97   *
*                              3434  390CD TCD 1171 QCD   325.21 QC   321.09 QD     4.12                                   *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
   LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
   3434  390CD    25.7      33.23     431.3    325.21   0       0.   .00000      .00   .00        0.  134   0   A33   .00
   3434  391C      .0        .00     431.3    325.21   0       0.   .00000      .00   .00        0.  134  99   A33   .00
   3434  392C    15.8      15.82     447.1    326.32   1     933.   .03418      .00   .00        0.  134  13   A33   .01
   3434  393C    15.4      10.94     462.5    321.85   1    1087.   .02409      .00   .00        0.  134  18   A32   .01
   3434  394C    13.9      11.68     476.4    313.58   1     788.   .02597      .00   .00        0.  134  14   A31   .01
   3434  395C    13.4       8.93     489.8    310.04   1    1027.   .02533      .00   .00        0.  134  18   A31   .01
   3434  396D    14.5      19.62      14.5     19.62   1     821.   .17430      .00   .00        0.  134   9   A33   .01
   3434  397D    13.8      15.15      28.3     32.05   1     822.   .05834      .00   .00        0.  134  11   A32   .01
   3434  398D     7.0       3.98      35.3     32.72   1    1261.   .02826      .00   .00        0.  134  21   A31   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  399C  TC 1186 QC   303.59 QCD   312.81 QD     9.22    3434  399D  TD 1171 QD    23.19 QDC   109.14 QC    85.95   *
*                              3434  399CD TCD 1185 QCD   313.14 QC   303.23 QD     9.92                                   *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
   LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE    20
                                   LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                      PROG F0601M

   Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                          STORM DAY 4
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
   LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
   3434  399CD    35.3      23.19     525.1    313.14   0       0.   .00000      .00   .00        0.  134   0   A31   .00
   3434  400C      .0        .00     525.1    313.14   0       0.   .00000      .00   .00        0.  134  99   A31   .00
   3434  401D     4.1       7.18       4.1      7.18   1     519.   .19214      .00   .00        0.  134   6   A32   .01
   3434  402D    14.7       9.28      18.8     15.72   1    1283.   .04474      .00   .00        0.  134  19   A31   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  403C  TC 1185 QC   313.14 QCD   316.61 QD     3.46    3434  403D  TD 1167 QD    10.53 QDC    91.91 QC    81.37   *
*                              3434  403CD TCD 1185 QCD   316.61 QC   313.14 QD     3.46                                   *
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*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  403CD   18.8      10.53     543.9    316.61   0       0.   .00000      .00   .00        0.  134   0   A31   .00
    3434  404C      .0        .00     543.9    316.61   0       0.   .00000      .00   .00        0.  134  99   A31   .00
    3434  405C    12.4      12.79     556.3    317.16   1     617.   .02937      .00   .00        0.  134  11   A31   .01
    3434  406C     6.2       4.33     562.5    315.38   1     834.   .02318      .00   .00        0.  134  16   A30   .01
    3434  407C     9.5      17.55     572.0    311.56   1     230.   .03829      .00   .00        0.  134   5   A30   .01
    3434  408C    17.7      15.97     589.7    311.69   1     672.   .02723      .00   .00        0.  134  12   A30   .01
    3434  409D     7.4      15.89       7.4     15.89   1     442.   .30093      .00   .00        0.  134   5   A33   .01
    3434  410D     7.3      10.76      14.7     24.87   1     646.   .12404      .00   .00        0.  134   8   A33   .01
    3434  411E     8.4      13.69       8.4     13.69   1     686.   .19352      .00   .00        0.  134   7   A33   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  412D  TD 1157 QD    22.48 QDE    35.02 QE    12.54    3434  412E  TE 1156 QE    12.55 QED    34.10 QD    21.55   *
*                                3434  412DE TDE 1157 QDE    35.02 QD    22.48 QE    12.54                                  *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  412DE     8.4      12.55      23.1     35.02   0       0.   .00000      .00   .00        0.  134   0   A33   .00
    3434  413D      .0        .00      23.1     35.02   0       0.   .00000      .00   .00        0.  134  99   A33   .00
    3434  414D    14.6      18.40      37.7     51.57   1     742.   .07094      .00   .00        0.  134  10   A33   .01
    3434  415D     7.7       9.91      45.4     52.17   1     653.   .05924      .00   .00        0.  134   9   A32   .01
    3434  416E     5.1       9.39       5.1      9.39   1     420.   .09460      .00   .00        0.  134   6   A33   .01
    3434  417E    11.8      10.55      16.9     18.78   1    1064.   .05809      .00   .00        0.  134  14   A32   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  418D  TD 1162 QD    48.44 QDE    62.50 QE    14.06    3434  418E  TE 1163 QE    14.31 QED    61.48 QD    47.17   *
*                                3434  418DE TDE 1162 QDE    62.50 QD    48.44 QE    14.06                                  *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  418DE    16.9      14.31      62.3     62.50   0       0.   .00000      .00   .00        0.  134   0   A32   .00
    3434  419D      .0        .00      62.3     62.50   0       0.   .00000      .00   .00        0.  134  99   A32   .00
    3434  420D    14.9      14.28      77.2     69.12   1     697.   .03696      .00   .00        0.  134  12   A31   .01
    3434  421D     7.1       6.80      84.3     64.58   1     676.   .03076      .00   .00        0.  134  12   A31   .01
    3434  422D     2.4       1.26      86.7     60.99   1    1159.   .02628      .00   .00        0.  134  21   A30   .01

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE    21
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                STORM DAY 4
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  423C  TC 1194 QC   309.32 QCD   331.14 QD    21.82    3434  423D  TD 1177 QD    51.27 QDC   131.63 QC    80.36   *
*                                3434  423CD TCD 1194 QCD   331.14 QC   309.32 QD    21.82                                  *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  423CD   86.7      51.27     676.4    331.14   0       0.   .00000      .00   .00        0.  134   0   A30   .00
    3434  424C      .0        .00     676.4    331.14   0       0.   .00000      .00   .00        0.  134  99   A30   .00
    3434  425D    13.2      27.81      13.2     27.81   1     724.   .26664      .00   .00        0.  134   6   A36   .01
    3434  426D    20.3      27.31      33.5     53.51   1    1265.   .14746      .00   .00        0.  134  11   A36   .01
    3434  427E     7.0      17.14       7.0     17.14   1     589.   .29640      .00   .00        0.  134   5   A36   .01
    3434  428E     7.1      10.36      14.1     25.20   1    1139.   .17017      .00   .00        0.  134  10   A36   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  429D  TD 1159 QD    47.26 QDE    68.43 QE    21.17    3434  429E  TE 1159 QE    21.17 QED    68.43 QD    47.26   *
*                                3434  429DE TDE 1159 QDE    68.43 QD    47.26 QE    21.17                                  *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
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    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  429DE   14.1     21.17      47.6     68.43   0       0.   .00000      .00   .00        0.  134   0   A35   .00
    3434  430D      .0       .00      47.6     68.43   0       0.   .00000      .00   .00        0.  134  99   A35   .00
    3434  431E    15.0     20.18      15.0     20.18   1    1399.   .18787      .00   .00        0.  134  11   A36   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  432D  TD 1159 QD    68.43 QDE    85.92 QE    17.49    3434  432E  TE 1160 QE    17.86 QED    83.77 QD    65.91   *
*                                3434  432DE TDE 1159 QDE    85.92 QD    68.43 QE    17.49                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  432DE   15.0     17.86      62.6     85.92   0       0.   .00000      .00   .00        0.  134   0   A35   .00
    3434  433D      .0       .00      62.6     85.92   0       0.   .00000      .00   .00        0.  134  99   A35   .00
    3434  434E     7.6     12.33       7.6     12.33   1     762.   .15728      .00   .00        0.  134   8   A35   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  435D  TD 1159 QD    85.92 QDE    96.56 QE    10.63    3434  435E  TE 1158 QE    11.21 QED    95.15 QD    83.94   *
*                                3434  435DE TDE 1159 QDE    96.56 QD    85.92 QE    10.63                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  435DE    7.6     11.21      70.2     96.56   0       0.   .00000      .00   .00        0.  134   0   A35   .00
    3434  436D      .0       .00      70.2     96.56   0       0.   .00000      .00   .00        0.  134  99   A35   .00
    3434  437D    17.1     20.40      87.3    113.92   1    1179.   .11395      .00   .00        0.  134  12   A35   .01
    3434  438E     9.3     15.08       9.3     15.08   1     910.   .25870      .00   .00        0.  134   8   A35   .01

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE    22
                                   LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                      PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  439D  TD 1162 QD   107.15 QDE   114.45 QE     7.30    3434  439E  TE 1157 QE    14.02 QED    69.06 QD    55.04   *
*                                3434  439DE TDE 1161 QDE   115.32 QD   106.21 QE     9.11                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  439DE    9.3     14.02      96.6    115.32   0       0.   .00000      .00   .00        0.  134   0   A34   .00
    3434  440D      .0       .00      96.6    115.32   0       0.   .00000      .00   .00        0.  134  99   A34   .00
    3434  441D    19.0     25.24     115.6    123.86   1     931.   .12445      .00   .00        0.  134  10   A34   .01
    3434  442E     7.4     17.35       7.4     17.35   1     380.   .23158      .00   .00        0.  134   5   A35   .01
    3434  443E    25.8     35.93      33.2     51.48   1    1057.   .15041      .00   .00        0.  134  10   A35   .01
    3434  444E    27.2     27.09      60.4     72.55   1    1518.   .11247      .00   .00        0.  134  14   A34   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  445D  TD 1163 QD   120.87 QDE   184.86 QE    63.99    3434  445E  TE 1162 QE    64.91 QED   184.54 QD   119.62   *
*                                3434  445DE TDE 1163 QDE   184.86 QD   120.87 QE    63.99                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  445DE   60.4     64.91     176.0    184.86   0       0.   .00000      .00   .00        0.  134   0   A33   .00
    3434  446D      .0       .00     176.0    184.86   0       0.   .00000      .00   .00        0.  134  99   A33   .00
    3434  447D    38.3     30.51     214.3    209.93   1    1436.   .05735      .00   .00        0.  134  17   A33   .01
    3434  448E    10.9     12.64      10.9     12.64   1    1086.   .19712      .00   .00        0.  134  11   A33   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  449D  TD 1167 QD   194.79 QDE   199.71 QE     4.93    3434  449E  TE 1160 QE    11.37 QED   100.46 QD    89.09   *
*                                3434  449DE TDE 1166 QDE   200.42 QD   194.35 QE     6.06                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
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    3434  449DE   10.9      11.37     225.2    200.42   0       0.   .00000      .00   .00        0.  134   0   A33   .00
    3434  450D      .0        .00     225.2    200.42   0       0.   .00000      .00   .00        0.  134  99   A33   .00
    3434  451D    18.0      18.02     243.2    202.21   1     949.   .03937      .00   .00        0.  134  13   A33   .01
    3434  452D    10.9       9.75     254.1    194.91   1     999.   .04261      .00   .00        0.  134  14   A32   .01
    3434  453D    18.7      16.73     272.8    188.44   1     935.   .05235      .00   .00        0.  134  13   A31   .01
    3434  454D    20.7      21.36     293.5    184.12   1     682.   .03769      .00   .00        0.  134  11   A31   .01
    3434  455D    19.5      12.79     313.0    181.49   1     943.   .02963      .00   .00        0.  134  17   A30   .01
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434  456C  TC 1194 QC   331.14 QCD   439.90 QD   108.76    3434  456D  TD 1183 QD   173.55 QDC   352.02 QC   178.46   *
 *                                3434  456CD TCD 1192 QCD   448.18 QC   326.18 QD   122.00                              *
 ***********************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  456CD   313.0     173.55     989.4    448.18   0       0.   .00000      .00   .00        0.  134   0   A30   .00

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE    23
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                STORM DAY 4
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  457C      .0        .00     989.4    448.18   0       0.   .00000      .00   .00        0.  134  99   A30   .00
    3434  458C    12.7       6.12    1002.1    448.70   2     841.   .01261      .00   .00        0.  134  21   A29   .01
    3434  459C     9.4       5.72    1011.5    446.83   2     832.   .02404      .00   .00        0.  134  17   A29   .01
    3434  460D     5.6       5.47       5.6      5.47   2     526.   .02162      .00   .00        0.  134  11   A30   .01
    3434  461D     8.6       3.56      14.2      8.46   2    1042.   .01822      .00   .00        0.  134  24   A29   .01
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434  462C  TC 1196 QC   445.17 QCD   446.10 QD      .92    3434  462D  TD 1167 QD     7.11 QDC   131.60 QC   124.48   *
 *                                3434  462CD TCD 1196 QCD   446.10 QC   445.17 QD      .92                                *
 ***********************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  462CD   14.2       7.11    1025.7    446.10   0       0.   .00000      .00   .00        0.  134   0   A29   .00
    3434  463C      .0        .00    1025.7    446.10   0       0.   .00000      .00   .00        0.  134  99   A29   .00
    3434  464C    10.5       6.82    1036.2    446.49   2     781.   .02284      .00   .00        0.  134  16   A29   .01
    3434  465C     9.8       2.71    1046.0    445.87   2    1159.   .01739      .00   .00        0.  134  30   A28   .01
    3434  466D    12.3      17.12      12.3     17.12   2     325.   .02436      .00   .00        0.  134   7   A30   .01
    3434  467D    22.5      10.84      34.8     27.29   2     963.   .02111      .00   .00        0.  134  21   A29   .01
    3434  468D    22.2      10.70      57.0     32.94   2     944.   .02024      .00   .00        0.  134  21   A29   .01
    3434  469D     9.8       2.71      66.8     32.53   2    1009.   .01614      .00   .00        0.  134  30   A28   .01
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434  470C  TC 1200 QC   442.73 QCD   447.65 QD     4.92    3434  470D  TD 1171 QD    29.55 QDC   155.55 QC   126.00   *
 *                                3434  470CD TCD 1200 QCD   447.65 QC   442.73 QD     4.92                               *
 ***********************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  470CD   66.8      29.55    1112.8    447.65   0       0.   .00000      .00   .00        0.  134   0   A28   .00
    3434  471C      .0        .00    1112.8    447.65   0       0.   .00000      .00   .00        0.  134  99   A28   .00
    3434  472C    23.0       6.37    1135.8    448.52   2    1203.   .01786      .00   .00        0.  134  30   A28   .01
    3434  473C    17.8       4.38    1153.6    445.86   2    1063.   .01754      .00   .00        0.  134  30   A27   .01
    3434  474C    12.3       3.03    1165.9    444.27   2    1110.   .01314      .00   .00        0.  134  30   A27   .01
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434  475B  TB 1201 QB   183.80 QBC   556.52 QC   372.73    3434  475C  TC 1208 QC   440.92 QCB   611.43 QB   170.50   *
 *                                3434  475BC TBC 1207 QBC   613.47 QB   173.65 QC   439.81                              *
 ***********************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  475BC 1165.9     440.92    1842.6    613.47   0       0.   .00000      .00   .00        0.  134   0   A27   .00
    3434  476B      .0        .00    1842.6    613.47   0       0.   .00000      .00   .00        0.  134  99   A27   .00
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     3434  477B    43.0       6.19    1885.6    614.83   2    1339.   .01081      .00   .00        0.  124  30   A26   .01
     3434  478B    24.2       3.48    1909.8    610.07   2    1359.   .01162      .00   .00        0.  124  30   A26   .01

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE    24
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                      PROG F0601M

     Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                  STORM DAY 4
                    SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
     LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434  479A  TA 1203 QA  1445.93 QAB  1875.68 QB   429.76    3434  479B  TB 1214 QB   605.30 QBA  1735.72 QA  1130.42   *
 *                              3434  479AB TAB 1206 QAB  1908.34 QA  1402.89 QB   505.45                                 *
 ***********************************************************************************************************************
                    SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
     LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     3434  479AB 1909.8     605.30    5403.5   1908.34   0       0.   .00000      .00   .00        0.  124   0   A26   .00
     3434  480A      .0        .00    5403.5   1908.34   0       0.   .00000      .00   .00        0.  124  99   A26   .00
     3434  481A    43.7       6.05    5447.2   1909.70   2    1025.   .00931      .00   .00        0.  124  30   A25   .01
     3434  482A    31.5       4.36    5478.7   1906.97   2    1379.   .00760      .00   .00        0.  124  30   A25   .01
     3434  483A    11.2       1.67    5489.9   1897.14   2    1218.   .00668      .00   .00        0.  134  30   A24   .01
     3434  484B     8.9       5.02       8.9      5.02   2     706.   .01905      .00   .00        0.  134  17   A28   .01
     3434  485B    18.0       4.43      26.9      8.73   2    1294.   .01639      .00   .00        0.  134  30   A27   .01
     3434  486B    27.4       6.74      54.3     12.18   2    1188.   .01414      .00   .00        0.  134  30   A27   .01
     3434  487B    32.7       4.71      87.0     15.23   2    1162.   .01080      .00   .00        0.  124  30   A26   .01
     3434  488B    40.8       5.65     127.8     17.81   2    1180.   .01273      .00   .00        0.  124  30   A25   .01
     3434  489B    26.7       3.70     154.5     18.44   2    1022.   .01145      .00   .00        0.  124  30   A25   .01
     3434  490B    12.2       1.82     166.7     18.75   2    1125.   .00824      .00   .00        0.  134  30   A24   .01
     3434  491B     7.0       1.04     173.7     18.75   2    1258.   .00628      .00   .00        0.  134  30   A24   .01
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434  492A  TA 1214 QA  1887.68 QAB  1905.99 QB    18.31    3434  492B  TB 1211 QB    18.38 QBA  1862.61 QA  1844.23   *
 *                              3434  492AB TAB 1214 QAB  1905.99 QA  1887.68 QB    18.31                                 *
 ***********************************************************************************************************************
                    SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
     LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     3434  492AB  173.7      18.38    5663.6   1905.99   0       0.   .00000      .00   .00        0.  134   0   A23   .00
     3434  493A      .0        .00    5663.6   1905.99   0       0.   .00000      .00   .00        0.  134  99   A23   .00
     3434  494B     7.7       1.39       7.7      1.39   2     746.   .01012      .00   .00        0.  134  30   A25   .01
     3434  495B    13.2       1.97      20.9      2.85   2    1091.   .00881      .00   .00        0.  134  30   A24   .01
     3434  496B    16.9       2.52      37.8      4.42   2    1125.   .00719      .00   .00        0.  134  30   A24   .01
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434  497A  TA 1214 QA  1905.99 QAB  1908.50 QB     2.51    3434  497B  TB 1186 QB     4.19 QBA   388.90 QA   384.70   *
 *                              3434  497AB TAB 1214 QAB  1908.50 QA  1905.99 QB     2.51                                 *
 ***********************************************************************************************************************
                    SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
     LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     3434  497AB   37.8       4.19    5701.4   1908.50   0       0.   .00000      .00   .00        0.  134   0   A23   .00
     3434  498A      .0        .00    5701.4   1908.50   0       0.   .00000      .00   .00        0.  134  99   A23   .00
     3434  499A     4.3        .55    5705.7   1908.61   2     897.   .00387      .00   .00        0.  134  30   A23   .01
     3434  500B    11.9       1.77      11.9      1.77   2     918.   .00913      .00   .00        0.  134  30   A24   .01
     3434  501B    16.9       2.52      28.8      3.58   2     938.   .00804      .00   .00        0.  134  30   A24   .01
     3434  502B     1.9        .41      30.7      3.53   2     344.   .00622      .00   .00        0.  134  23   A23   .01

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE    25
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                      PROG F0601M

     Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                  STORM DAY 4
                    SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
     LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
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*****************************************************************************************************************************
*                                                                CONFLUENCE Q'S                                             *
*   3434  503A  TA 1217 QA  1899.41 QAB  1901.03 QB     1.62    3434  503B  TB 1184 QB     3.51 QBA   345.85 QA   342.35   *
*                                 3434  503AB TAB 1217 QAB  1901.03 QA  1899.41 QB     1.62                                 *
*****************************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	503AB	30.7	3.51	5736.4	1901.03	0	0.	.00000	.00	.00	0.	134	0	A23	.00
3434	504A	.0	.00	5736.4	1901.03	0	0.	.00000	.00	.00	0.	134	99	A23	.00
3434	505A	6.5	.83	5742.9	1901.20	2	1046.	.00395	.00	.00	0.	134	30	A23	.01
3434	506B	14.0	2.09	14.0	2.09	2	878.	.00787	.00	.00	0.	134	30	A24	.01
3434	507B	10.7	1.36	24.7	3.03	2	1013.	.00544	.00	.00	0.	134	30	A23	.01

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*****************************************************************************************************************************
*                                                                CONFLUENCE Q'S                                             *
*   3434  508A  TA 1220 QA  1888.02 QAB  1889.32 QB     1.30    3434  508B  TB 1186 QB     2.76 QBA   333.44 QA   330.68   *
*                                 3434  508AB TAB 1220 QAB  1889.32 QA  1888.02 QB     1.30                                 *
*****************************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	508AB	24.7	2.76	5767.6	1889.32	0	0.	.00000	.00	.00	0.	134	0	A23	.00
3434	509A	.0	.00	5767.6	1889.32	0	0.	.00000	.00	.00	0.	134	99	A23	.00
3434	510A	23.7	2.89	5791.3	1889.87	2	947.	.00661	.00	.00	0.	134	30	A22	.01
3434	511A	15.8	1.93	5807.1	1884.00	2	688.	.00955	.00	.00	0.	134	30	A22	.01
3434	512A	18.2	2.22	5825.3	1882.49	2	1134.	.00730	.00	.00	0.	134	30	A22	.01
3434	513A	11.5	1.34	5836.8	1873.73	2	1217.	.00440	.00	.00	0.	134	30	A21	.01
3434	514B	10.1	1.83	10.1	1.83	2	1517.	.01180	.00	.00	0.	134	30	A25	.01
3434	515B	14.9	2.22	25.0	3.07	2	1221.	.00830	.00	.00	0.	134	30	A24	.01
3434	516B	16.7	2.49	41.7	4.44	2	1182.	.00720	.00	.00	0.	134	30	A24	.01
3434	517B	9.6	1.22	51.3	4.88	2	1043.	.00569	.00	.00	0.	134	30	A23	.01
3434	518B	18.2	2.32	69.5	5.67	2	631.	.00569	.00	.00	0.	134	30	A23	.01
3434	519B	28.8	3.51	98.3	8.17	2	665.	.00454	.00	.00	0.	134	30	A22	.01
3434	520B	20.4	2.49	118.7	9.97	2	640.	.00436	.00	.00	0.	134	30	A22	.01
3434	521B	22.8	2.78	141.5	11.66	2	983.	.00817	.00	.00	0.	134	30	A22	.01
3434	522B	15.9	1.85	157.4	12.16	2	881.	.00668	.00	.00	0.	134	30	A21	.01
3434	523B	11.9	1.38	169.3	12.35	2	1311.	.00408	.00	.00	0.	134	30	A21	.01

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*****************************************************************************************************************************
*                                                                CONFLUENCE Q'S                                             *
*   3434  524A  TA 1230 QA  1856.13 QAB  1866.61 QB    10.49    3434  524B  TB 1207 QB    11.96 QBA   381.88 QA   369.91   *
*                                 3434  524AB TAB 1230 QAB  1866.61 QA  1856.13 QB    10.49                                 *
*****************************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	524AB	169.3	11.96	6006.1	1866.61	0	0.	.00000	.00	.00	0.	134	0	A21	.00
3434	525A	.0	.00	6006.1	1866.61	0	0.	.00000	.00	.00	0.	134	99	A21	.00
3434	526A	6.8	.79	6012.9	1866.75	2	1360.	.00719	.00	.00	0.	134	30	A21	.01
3434	527A	.0	.00	6012.9	1854.12	0	0.	.00000	.00	.00	0.	134	99	A21	.00

Program Package Serial Number: 2173
04/16/10 FILE: AREA4 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
3434	1A	40.4	9.80	40.4	9.80	2	978.	.02722	.00	.00	0.	124	30	A31	.01
3434	2A	46.5	10.09	86.9	18.91	2	1146.	.02486	.00	.00	0.	124	30	A30	.01
3434	3A	43.9	9.53	130.8	26.21	2	1308.	.01832	.00	.00	0.	124	30	A30	.01
3434	4A	35.9	11.13	166.7	32.74	2	1211.	.01524	.00	.00	0.	134	30	A29	.01
3434	5A	39.0	10.80	205.7	37.17	2	1265.	.01223	.00	.00	0.	134	30	A28	.01
3434	6A	37.7	10.44	243.4	40.60	2	1415.	.00984	.00	.00	0.	134	30	A28	.01
3434	7A	27.6	6.79	271.0	41.09	2	1208.	.01172	.00	.00	0.	134	30	A27	.01
3434	8A	26.8	5.71	297.8	41.89	2	1214.	.01151	.00	.00	0.	134	30	A26	.01
3434	9A	26.4	4.77	324.2	42.46	2	1060.	.01002	.00	.00	0.	134	30	A25	.01
3434	10A	26.8	3.99	351.0	42.99	2	1094.	.01221	.00	.00	0.	134	30	A24	.01
3434	11A	23.6	3.51	374.6	43.41	2	803.	.00980	.00	.00	0.	134	30	A24	.01
3434	12A	32.1	4.08	406.7	44.08	2	1128.	.00849	.00	.00	0.	134	30	A23	.01
3434	13B	11.1	6.00	11.1	6.00	2	785.	.01433	.00	.00	0.	134	19	A29	.01
3434	14B	16.5	8.92	27.6	12.73	2	858.	.01707	.00	.00	0.	134	19	A29	.01
3434	15B	32.6	10.10	60.2	21.02	2	1355.	.01217	.00	.00	0.	134	30	A29	.01
3434	16B	42.8	11.86	103.0	26.26	2	1356.	.01136	.00	.00	0.	134	30	A28	.01
3434	17B	44.3	10.90	147.3	29.43	2	1259.	.00906	.00	.00	0.	134	30	A27	.01
3434	18B	44.8	9.55	192.1	30.67	2	1163.	.01173	.00	.00	0.	134	30	A26	.01
3434	19B	48.5	10.34	240.6	32.75	2	1302.	.00931	.00	.00	0.	134	30	A26	.01
3434	20B	31.3	5.66	271.9	33.60	2	1118.	.01118	.00	.00	0.	134	30	A25	.01
3434	21B	14.8	2.20	286.7	34.03	2	1152.	.00719	.00	.00	0.	134	30	A24	.01
3434	22B	13.6	1.73	300.3	34.28	2	1203.	.00685	.00	.00	0.	134	30	A23	.01

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* CONFLUENCE Q'S *
* 3434 23A TA 1221 QA 43.73 QAB 77.56 QB 33.83 3434 23B TB 1216 QB 34.09 QBA 77.22 QA 43.13 *
* 3434 23AB TAB 1220 QAB 77.63 QA 43.70 QB 33.92 *
****

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	23AB	300.3	34.09	707.0	77.63	0	0.	.00000	.00	.00	0.	134	0	A23	.00
3434	24A	.0	.00	707.0	77.63	0	0.	.00000	.00	.00	0.	134	99	A23	.00
3434	25A	33.3	2.40	740.3	79.75	2	1295.	.00710	.00	.00	0.	134	99	A23	.01
3434	26A	26.2	1.81	766.5	80.76	2	856.	.01020	.00	.00	0.	134	99	A22	.01
3434	27A	35.3	2.43	801.8	82.58	2	969.	.00770	.00	.00	0.	134	99	A22	.01
3434	28A	31.5	2.07	833.3	83.92	2	921.	.00500	.00	.00	0.	134	99	A21	.01
3434	29A	25.6	1.69	858.9	84.76	2	1200.	.00810	.00	.00	0.	134	99	A21	.01
3434	30A	.0	.00	858.9	84.41	0	0.	.00000	.00	.00	0.	134	99	A21	.00

Program Package Serial Number: 2173
04/16/10 FILE: AREA5 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM RAIN ZONE	DAY 4 PCT IMPV
3434	1A	28.3	6.14	28.3	6.14	2	1026.	.02625	.00	.00	0.	124	30	A30	.01
3434	2A	33.0	7.16	61.3	12.43	2	1349.	.02157	.00	.00	0.	124	30	A30	.01
3434	3A	26.6	5.15	87.9	15.61	2	1123.	.01722	.00	.00	0.	124	30	A29	.01
3434	4A	30.9	9.58	118.8	21.08	2	1227.	.01653	.00	.00	0.	134	30	A29	.01
3434	5A	30.3	8.39	149.1	25.51	2	1212.	.01549	.00	.00	0.	134	30	A28	.01
3434	6A	31.3	7.70	180.4	28.67	2	1174.	.01167	.00	.00	0.	134	30	A27	.01
3434	7A	32.9	7.01	213.3	31.38	2	1270.	.01090	.00	.00	0.	134	30	A26	.01
3434	8A	30.9	6.59	244.2	32.07	2	1151.	.01200	.00	.00	0.	134	30	A26	.01
3434	9A	26.8	4.85	271.0	32.86	2	1078.	.00961	.00	.00	0.	134	30	A25	.01
3434	10A	26.0	3.87	297.0	33.45	2	1159.	.01115	.00	.00	0.	134	30	A24	.01
3434	11A	14.3	2.13	311.3	33.64	2	979.	.00999	.00	.00	0.	134	30	A24	.01
3434	12A	5.1	.65	316.4	33.61	2	931.	.01063	.00	.00	0.	134	30	A23	.01
3434	13B	10.0	11.51	10.0	11.51	2	385.	.02052	.00	.00	0.	134	9	A30	.01
3434	14B	16.4	7.49	26.4	18.35	2	1006.	.01874	.00	.00	0.	134	22	A29	.01
3434	15B	25.7	7.12	52.1	22.33	2	1167.	.01925	.00	.00	0.	134	30	A28	.01
3434	16B	25.5	7.06	77.6	25.34	2	1180.	.01460	.00	.00	0.	134	30	A28	.01
3434	17B	23.4	5.76	101.0	26.08	2	1214.	.01195	.00	.00	0.	134	30	A27	.01
3434	18B	24.5	5.22	125.5	26.01	2	1166.	.01161	.00	.00	0.	134	30	A26	.01
3434	19B	21.8	3.94	147.3	25.81	2	1151.	.01287	.00	.00	0.	134	30	A25	.01
3434	20B	18.6	3.36	165.9	25.75	2	1025.	.00996	.00	.00	0.	134	30	A25	.01
3434	21B	23.2	3.46	189.1	25.87	2	1144.	.01096	.00	.00	0.	134	30	A24	.01
3434	22B	18.4	2.34	207.5	25.82	2	854.	.01170	.00	.00	0.	134	30	A23	.01
3434	23B	22.2	2.82	229.7	26.12	2	806.	.01314	.00	.00	0.	134	30	A23	.01

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*                                                    CONFLUENCE Q'S                                                          *
*   3434   24A  TA 1217 QA    33.47 QAB    58.85 QB    25.38    3434   24B  TB 1222 QB    25.93 QBA    59.03 QA    33.10   *
*                              3434   24AB TAB 1220 QAB    59.20 QA    33.33 QB    25.87                                   *
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	24AB	229.7	25.93	546.1	59.20	0	0.	.00000	.00	.00	0.	134	0	A23	.00
3434	25A	.0	.00	546.1	59.20	0	0.	.00000	.00	.00	0.	134	99	A23	.00
3434	26A	13.8	5.71	559.9	59.61	2	823.	.00807	.00	.00	0.	134	24	A29	.01
3434	27A	16.0	7.50	575.9	59.78	2	749.	.01284	.00	.00	0.	134	20	A28	.01
3434	28A	10.1	5.34	586.0	59.90	2	611.	.00869	.00	.00	0.	134	18	A28	.01
3434	29A	15.1	3.71	601.1	60.16	2	1614.	.00513	.00	.00	0.	134	30	A27	.01
3434	30B	10.0	2.13	10.0	2.13	2	2097.	.01240	.00	.00	0.	134	30	A26	.01
3434	31B	21.2	3.83	31.2	4.45	2	1538.	.01192	.00	.00	0.	134	30	A25	.01
3434	32B	22.6	4.09	53.8	6.50	2	1248.	.01173	.00	.00	0.	134	30	A25	.01
3434	33B	26.3	3.92	80.1	9.02	2	1402.	.01292	.00	.00	0.	134	30	A24	.01
3434	34B	17.9	2.28	98.0	10.06	2	926.	.01151	.00	.00	0.	134	30	A23	.01
3434	35B	12.9	1.64	110.9	10.46	2	724.	.00682	.00	.00	0.	134	30	A23	.01
3434	36B	15.3	1.95	126.2	10.92	2	1164.	.00641	.00	.00	0.	134	30	A23	.01

Program Package Serial Number: 2173
04/16/10 FILE: AREA5 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 2
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

LOCATION	SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM RAIN ZONE	DAY 4 PCT IMPV

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*                                                    CONFLUENCE Q'S                                                          *
*   3434   37A  TA 1244 QA    59.05 QAB    66.13 QB     7.09    3434   37B  TB 1201 QB    10.75 QBA    52.47 QA    41.71   *
*                              3434   37AB TAB 1242 QAB    66.21 QA    58.93 QB     7.28                                   *
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	37AB	126.2	10.75	727.3	66.21	0	0.	.00000	.00	.00	0.	134	0	A23	.00
3434	38A	.0	.00	727.3	66.21	0	0.	.00000	.00	.00	0.	134	99	A23	.00
3434	39A	21.5	2.74	748.8	66.66	2	1448.	.00705	.00	.00	0.	134	30	A23	.01
3434	40A	17.4	2.21	766.2	66.48	2	1056.	.00382	.00	.00	0.	134	30	A23	.01
3434	41A	.0	.00	766.2	66.02	0	0.	.00000	.00	.00	0.	134	99	A23	.00

Program Package Serial Number: 2173
04/16/10 FILE: AREA6 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
3434	1A	19.3	4.19	19.3	4.19	2	1438.	.02376	.00	.00	0.	124	30	A30	.01
3434	2A	21.2	4.10	40.5	7.06	2	1256.	.02089	.00	.00	0.	124	30	A29	.01
3434	3A	23.8	4.60	64.3	10.03	2	1129.	.01946	.00	.00	0.	124	30	A29	.01
3434	4A	29.1	8.06	93.4	15.58	2	1119.	.01652	.00	.00	0.	134	30	A28	.01
3434	5A	35.3	8.68	128.7	21.43	2	1174.	.01445	.00	.00	0.	134	30	A27	.01
3434	6A	48.4	10.32	177.1	26.89	2	1421.	.01251	.00	.00	0.	134	30	A26	.01
3434	7A	44.3	8.01	221.4	30.59	2	1501.	.01165	.00	.00	0.	134	30	A25	.01
3434	8A	27.5	4.10	248.9	30.91	2	1517.	.01319	.00	.00	0.	134	30	A24	.01
3434	9A	14.5	2.16	263.4	30.87	2	1086.	.01219	.00	.00	0.	134	30	A24	.01
3434	10A	14.6	1.86	278.0	31.02	2	1740.	.01180	.00	.00	0.	134	30	A23	.01
3434	11B	20.6	4.39	20.6	4.39	2	3146.	.01267	.00	.00	0.	134	30	A26	.01
3434	12B	18.0	3.25	38.6	4.40	2	1107.	.01365	.00	.00	0.	134	30	A25	.01
3434	13B	31.2	4.65	69.8	7.85	2	1180.	.01653	.00	.00	0.	134	30	A24	.01
3434	14B	32.8	4.89	102.6	11.36	2	1091.	.01167	.00	.00	0.	134	30	A24	.01
3434	15B	31.0	3.94	133.6	14.11	2	1031.	.01331	.00	.00	0.	134	30	A23	.01
3434	16B	20.5	2.61	154.1	15.60	2	614.	.01079	.00	.00	0.	134	30	A23	.01

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*                                                    CONFLUENCE Q'S                                                    *
*   3434   17A  TA 1210 QA    30.32 QAB    40.46 QB    10.14    3434   17B  TB 1182 QB    15.43 QBA    35.42 QA    19.99   *
*                                3434   17AB TAB 1205 QAB    40.95 QA    29.74 QB    11.21                                *
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	17AB	154.1	15.43	432.1	40.95	0	0.	.00000	.00	.00	0.	134	0	A23	.00
3434	18A	.0	.00	432.1	40.95	0	0.	.00000	.00	.00	0.	134	99	A23	.00
3434	19A	46.5	5.67	478.6	42.25	2	1339.	.01015	.00	.00	0.	134	30	A22	.01
3434	20A	49.6	5.77	528.2	43.20	2	932.	.00836	.00	.00	0.	134	30	A21	.01
3434	21A	39.1	4.55	567.3	43.95	2	701.	.01171	.00	.00	0.	134	30	A21	.01
3434	22A	22.7	2.64	590.0	44.39	2	684.	.00593	.00	.00	0.	134	30	A21	.01
3434	23A	20.1	2.34	610.1	44.72	2	1174.	.00358	.00	.00	0.	134	30	A21	.01
3434	24A	.0	.00	610.1	44.38	0	0.	.00000	.00	.00	0.	134	99	A21	.00

Program Package Serial Number: 2173
04/16/10 FILE: AREA7 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
3434	1A	8.6	9.80	8.6	9.80	1	1121.	.18951	.00	.00	0.	124	11	A37	.01
3434	2A	38.1	19.06	46.7	26.98	1	1807.	.08048	.00	.00	0.	124	23	A36	.01
3434	3A	34.6	12.90	81.3	33.83	1	1660.	.05056	.00	.00	0.	124	28	A35	.01
3434	4A	9.6	3.43	90.9	32.05	2	1542.	.03738	.00	.00	0.	124	29	A35	.01
3434	5A	21.7	8.21	112.6	32.56	2	1348.	.03985	.00	.00	0.	124	26	A34	.01
3434	6A	24.2	10.77	136.8	33.30	2	1056.	.03752	.00	.00	0.	124	21	A33	.01
3434	7A	25.3	12.53	162.1	34.49	2	858.	.03256	.00	.00	0.	124	18	A32	.01
3434	8A	34.4	16.87	196.5	45.91	2	804.	.04053	.00	.00	0.	124	17	A31	.01
3434	9A	40.6	16.17	237.1	58.53	2	762.	.03231	.00	.00	0.	124	19	A30	.01
3434	10A	45.7	20.42	282.8	72.59	2	639.	.02808	.00	.00	0.	124	17	A30	.01
3434	11A	32.1	6.97	314.9	78.69	2	1693.	.02336	.00	.00	0.	124	30	A30	.01
3434	12A	28.7	5.55	343.6	79.41	2	1190.	.01821	.00	.00	0.	124	30	A29	.01
3434	13A	29.1	4.89	372.7	80.90	2	1045.	.02011	.00	.00	0.	124	30	A28	.01
3434	14A	30.8	8.53	403.5	83.00	2	1181.	.01704	.00	.00	0.	134	30	A28	.01
3434	15A	26.5	6.52	430.0	82.66	2	995.	.01519	.00	.00	0.	134	30	A27	.01
3434	16A	32.0	6.82	462.0	82.78	2	1093.	.01173	.00	.00	0.	134	30	A26	.01
3434	17A	33.9	7.23	495.9	82.34	2	1035.	.01109	.00	.00	0.	134	30	A26	.01
3434	18A	37.2	6.73	533.1	82.18	2	1085.	.01538	.00	.00	0.	134	30	A25	.01
3434	19A	39.1	5.82	572.2	82.39	2	1124.	.01669	.00	.00	0.	134	30	A24	.01
3434	20A	40.4	5.14	612.6	82.60	2	1074.	.01436	.00	.00	0.	134	30	A23	.01
3434	21A	39.9	5.08	652.5	82.79	2	1058.	.01254	.00	.00	0.	134	30	A23	.01
3434	22A	34.0	4.15	686.5	82.74	2	1083.	.01133	.00	.00	0.	134	30	A22	.01
3434	23B	10.3	2.85	10.3	2.85	2	2335.	.01830	.00	.00	0.	134	30	A28	.01
3434	24B	25.3	6.22	35.6	6.95	2	2078.	.01459	.00	.00	0.	134	30	A27	.01
3434	25B	13.9	2.51	49.5	7.18	2	881.	.01244	.00	.00	0.	134	30	A25	.01
3434	26B	21.6	3.91	71.1	8.79	2	1052.	.01465	.00	.00	0.	134	30	A25	.01
3434	27B	29.7	4.42	100.8	11.22	2	1149.	.01488	.00	.00	0.	134	30	A24	.01
3434	28B	31.5	4.01	132.3	14.07	2	1228.	.01191	.00	.00	0.	134	30	A23	.01
3434	29B	24.6	3.13	156.9	15.56	2	1058.	.01372	.00	.00	0.	134	30	A23	.01
3434	30B	24.9	3.04	181.8	16.59	2	1146.	.01126	.00	.00	0.	134	30	A22	.01

```
*****************************************************************************************************************************
*                                                    CONFLUENCE Q'S                                                         *
*   3434   31A  TA 1220 QA    81.79 QAB    94.47 QB    12.68    3434   31B  TB 1190 QB    16.26 QBA    74.17 QA    57.91   *
*                                 3434   31AB TAB 1220 QAB    94.47 QA    81.79 QB    12.68                                *
*****************************************************************************************************************************
```

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	31AB	181.8	16.26	868.3	94.47	0	0.	.00000	.00	.00	0.	134	0	A22	.00
3434	32A	.0	.00	868.3	94.47	0	0.	.00000	.00	.00	0.	134	99	A22	.00
3434	33A	37.8	4.39	906.1	95.32	2	852.	.00912	.00	.00	0.	134	30	A21	.01
3434	34A	36.1	4.20	942.2	95.51	2	744.	.01224	.00	.00	0.	134	30	A21	.01
3434	35A	29.6	3.44	971.8	95.78	2	711.	.00837	.00	.00	0.	134	30	A21	.01
3434	36A	20.1	2.34	991.9	95.79	2	501.	.00502	.00	.00	0.	134	30	A21	.01
3434	37A	.0	.00	991.9	95.46	0	0.	.00000	.00	.00	0.	134	99	A21	.00

ATTACHMENT 4

Existing Conditions
LAR04 Calculations
(Burn Conditions)

Program Package Serial Number: 2173

04/16/10 FILE: AREA1 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
3434	1A	7.7	3.45	7.7	3.45	2	1486.	.00658	.00	.00	0.	334	30	A21	.01
3434	2A	26.0	11.64	33.7	13.38	2	1087.	.00472	.00	.00	0.	334	30	A21	.01
3434	3A	26.7	11.95	60.4	23.06	2	1193.	.00498	.00	.00	0.	334	30	A21	.01
3434	4A	28.2	12.62	88.6	31.58	2	1000.	.00379	.00	.00	0.	334	30	A21	.01
3434	5A	45.0	20.14	133.6	45.01	2	1157.	.00482	.00	.00	0.	334	30	A21	.01
3434	6A	46.5	20.82	180.1	59.16	2	857.	.00740	.00	.00	0.	334	30	A21	.01
3434	7A	57.4	25.70	237.5	79.13	2	875.	.00728	.00	.00	0.	334	30	A21	.01
3434	8A	51.1	22.88	288.6	97.04	2	828.	.00444	.00	.00	0.	334	30	A21	.01
3434	9A	38.4	17.19	327.0	109.13	2	889.	.00437	.00	.00	0.	334	30	A21	.01
3434	10A	25.6	11.46	352.6	115.14	2	679.	.00391	.00	.00	0.	334	30	A21	.01
3434	11A	.0	.00	352.6	114.13	0	0.	.00000	.00	.00	0.	334	99	A21	.01

Program Package Serial Number: 2173

04/16/10 FILE: AREA1A INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
3434	1A	13.4	6.00	13.4	6.00	2	1347.	.00807	.00	.00	0.	334	30	A21	.01
3434	2A	.0	.00	13.4	5.47	0	0.	.00000	.00	.00	0.	334	99	A21	.00

Program Package Serial Number: 2173

04/16/10 FILE: AREA1B INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
3434	1A	8.7	4.08	8.7	4.08	2	927.	.00604	.00	.00	0.	334	30	A22	.01
3434	2A	15.9	7.47	24.6	10.57	2	908.	.00579	.00	.00	0.	334	30	A22	.01
3434	3A	10.6	4.98	35.2	14.32	2	660.	.00860	.00	.00	0.	334	30	A22	.01
3434	4A	.0	.00	35.2	14.19	0	0.	.00000	.00	.00	0.	334	99	A22	.00

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 Program Package Serial Number:  2173
04/19/10   FILE: AREA2    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     1
                                        LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                      PROG F0601M

     Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                  STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
     LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     3434    1A    13.9      49.68      13.9     49.68   1     408.   .16339      .00   .00        0.  334   5   A39   .01
     3434    2A    13.0      27.83      26.9     73.76   1    1284.   .14000      .00   .00        0.  334  11   A38   .01
     3434    3B    15.8      56.47      15.8     56.47   1     537.   .16873      .00   .00        0.  334   5   A39   .01
     3434    4B    24.3      52.01      40.1    103.16   1    1362.   .11857      .00   .00        0.  334  11   A38   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434    5A  TA 1157 QA    65.12 QAB   156.68 QB    91.55    3434    5B  TB 1158 QB    93.39 QBA   158.41 QA    65.03   *
*                                 3434    5AB TAB 1158 QAB   158.41 QA    65.03 QB    93.39                                 *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
     LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     3434    5AB   40.1      93.39      67.0    158.41   0       0.   .00000      .00   .00        0.  320   0   A38   .00
     3434    6A     .0        .00      67.0    158.41   0       0.   .00000      .00   .00        0.  320  99   A38   .00
     3434    7B    7.1      25.38       7.1     25.38   1     554.   .16719      .00   .00        0.  334   5   A39   .01
     3434    8B   14.2      44.83      21.3     66.78   1    1079.   .16394      .00   .00        0.  320   7   A38   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434    9A  TA 1158 QA   158.41 QAB   218.05 QB    59.63    3434    9B  TB 1157 QB    62.56 QBA   219.24 QA   156.68   *
*                                 3434    9AB TAB 1157 QAB   219.24 QA   156.68 QB    62.56                                 *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
     LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     3434    9AB   21.3      62.56      88.3    219.24   0       0.   .00000      .00   .00        0.  320   0   A38   .00
     3434   10A     .0        .00      88.3    219.24   0       0.   .00000      .00   .00        0.  320  99   A38   .00
     3434   11A   50.6     122.15     138.9    335.10   1    1575.   .07659      .00   .00        0.  320  11   A37   .01
     3434   12B    8.3      31.05       8.3     31.05   1     819.   .24940      .00   .00        0.  320   5   A37   .01
     3434   13B    6.0      22.45      14.3     45.59   1     473.   .10945      .00   .00        0.  320   5   A37   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   14A  TA 1160 QA   314.22 QAB   338.80 QB    24.58    3434   14B  TB 1156 QB    44.04 QBA   258.59 QA   214.54   *
*                                 3434   14AB TAB 1160 QAB   338.80 QA   314.22 QB    24.58                                 *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
     LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     3434   14AB   14.3      44.04     153.2    338.80   0       0.   .00000      .00   .00        0.  320   0   A37   .00
     3434   15A     .0        .00     153.2    338.80   0       0.   .00000      .00   .00        0.  320  99   A37   .00
     3434   16A   12.5      32.57     165.7    355.87   1    1133.   .06226      .00   .00        0.  320   9   A36   .01
     3434   17B   10.9      38.81      10.9     38.81   1     919.   .15512      .00   .00        0.  320   6   A39   .01
     3434   18C   12.6      41.04      12.6     41.04   1    1025.   .13550      .00   .00        0.  320   7   A39   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   19B  TB 1156 QB    35.45 QBC    72.38 QC    36.94    3434   19C  TC 1157 QC    38.09 QCB    72.28 QB    34.19   *
*                                 3434   19BC TBC 1156 QBC    72.38 QB    35.45 QC    36.94                                 *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
     LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV

 Program Package Serial Number:  2173
04/19/10   FILE: AREA2    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     2
                                        LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                      PROG F0601M

     Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                  STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
     LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     3434   19BC   12.6      38.09      23.5     72.38   0       0.   .00000      .00   .00        0.  320   0   A38   .00
     3434   20B     .0        .00      23.5     72.38   0       0.   .00000      .00   .00        0.  320  99   A38   .00
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3434	21B	8.4	32.41	31.9	90.83	1	663.	.12042	.00	.00	0.	320	5	A38	.01
3434	22C	11.6	40.07	11.6	40.07	1	745.	.15132	.00	.00	0.	320	6	A38	.01
3434	23C	14.0	48.35	25.6	81.34	1	793.	.10760	.00	.00	0.	320	6	A38	.01

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434   24B  TB 1157 QB    89.28 QBC   165.35 QC    76.07    3434   24C  TC 1156 QC    76.26 QCB   162.63 QB    86.37   *
*                                3434   24BC TBC 1157 QBC   165.35 QB    89.28 QC    76.07                                 *
*****************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	24BC	25.6	76.26	57.5	165.35	0	0.	.00000	.00	.00	0.	320	0	A38	.00
3434	25B	.0	.00	57.5	165.35	0	0.	.00000	.00	.00	0.	320	99	A38	.00
3434	26B	19.0	58.25	76.5	211.51	1	1006.	.13251	.00	.00	0.	320	7	A37	.01
3434	27B	19.4	50.54	95.9	249.28	1	1258.	.08740	.00	.00	0.	320	9	A36	.01

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434   28A  TA 1162 QA   345.98 QAB   566.38 QB   220.40    3434   28B  TB 1160 QB   237.15 QBA   557.33 QA   320.19   *
*                                3434   28AB TAB 1161 QAB   571.10 QA   338.09 QB   233.00                                 *
*****************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	28AB	95.9	237.15	261.6	571.10	0	0.	.00000	.00	.00	0.	320	0	A36	.00
3434	29A	.0	.00	261.6	571.10	0	0.	.00000	.00	.00	0.	320	99	A36	.00
3434	30B	17.1	55.41	17.1	55.41	1	773.	.19691	.00	.00	0.	320	6	A36	.01
3434	31B	18.7	60.59	35.8	109.34	1	790.	.14025	.00	.00	0.	320	6	A36	.01

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434   32A  TA 1161 QA   571.10 QAB   622.74 QB    51.65    3434   32B  TB 1156 QB   104.90 QBA   472.28 QA   367.38   *
*                                3434   32AB TAB 1161 QAB   622.74 QA   571.10 QB    51.65                                 *
*****************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	32AB	35.8	104.90	297.4	622.74	0	0.	.00000	.00	.00	0.	320	0	A36	.00
3434	33A	.0	.00	297.4	622.74	0	0.	.00000	.00	.00	0.	320	99	A36	.00
3434	34A	34.0	76.80	331.4	679.14	4	1317.	.06084	5.00	.00	0.	320	11	A35	.01
3434	35A	34.6	59.64	366.0	721.77	1	1247.	.07592	.00	.00	0.	334	13	A35	.01
3434	36A	41.7	86.99	407.7	728.21	1	731.	.06978	.00	.00	0.	334	9	A34	.01
3434	37A	53.1	68.98	460.8	781.80	1	1686.	.05585	.00	.00	0.	334	19	A34	.01
3434	38A	31.6	29.12	492.4	791.74	1	1997.	.03319	.00	.00	0.	334	29	A33	.01
3434	39B	8.9	19.05	8.9	19.05	1	733.	.18097	.00	.00	0.	334	8	A33	.01
3434	40B	17.2	27.31	26.1	45.05	1	1226.	.08231	.00	.00	0.	334	13	A33	.01

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434   41A  TA 1171 QA   757.54 QAB   774.27 QB    16.73    3434   41B  TB 1161 QB    41.41 QBA   423.94 QA   382.53   *
*                                3434   41AB TAB 1171 QAB   774.27 QA   757.54 QB    16.73                                 *
*****************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	41AB	26.1	41.41	518.5	774.27	0	0.	.00000	.00	.00	0.	334	0	A32	.00
3434	42A	.0	.00	518.5	774.27	0	0.	.00000	.00	.00	0.	334	99	A32	.00
3434	43A	15.8	19.49	534.3	779.51	1	1076.	.02170	.00	.00	0.	334	18	A32	.01
3434	44A	16.6	21.20	550.9	769.17	1	926.	.02751	.00	.00	0.	334	16	A31	.01
3434	45A	15.0	19.14	565.9	764.19	1	756.	.02341	.00	.00	0.	334	15	A30	.01
3434	46A	13.2	14.64	579.1	761.17	1	873.	.02930	.00	.00	0.	334	17	A29	.01
3434	47A	14.9	18.09	594.0	757.30	1	800.	.03467	.00	.00	0.	334	15	A29	.01
3434	48A	17.9	18.11	611.9	756.25	1	836.	.02619	.00	.00	0.	334	18	A28	.01

```
    3434   49B     2.4       4.17       2.4      4.17   1     543.   .02719      .00   .00        0.  334  10   A31   .01
    3434   50B     6.5      10.56       8.9     11.94   1     652.   .03398      .00   .00        0.  334  11   A31   .01
    3434   51B     9.2      14.33      18.1     22.13   1     585.   .03107      .00   .00        0.  334  11   A30   .01
    3434   52B    11.8      17.50      29.9     33.50   1     586.   .03982      .00   .00        0.  334  11   A29   .01
    3434   53B     8.8      11.15      38.7     41.04   1     763.   .03509      .00   .00        0.  334  14   A29   .01
    3434   54B     3.0       2.81      41.7     41.35   1     908.   .02600      .00   .00        0.  334  20   A28   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   55A  TA 1186 QA   749.03 QAB   771.34 QB    22.32    3434   55B  TB 1172 QB    38.04 QBA   361.95 QA   323.91   *
*                                3434   55AB TAB 1185 QAB   772.11 QA   748.83 QB    23.29                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   55AB   41.7      38.04     653.6    772.11   0       0.   .00000      .00   .00        0.  334   0   A28   .00
    3434   56A      .0        .00     653.6    772.11   0       0.   .00000      .00   .00        0.  334  99   A28   .00
    3434   57B     3.4       5.22       3.4      5.22   1     686.   .02217      .00   .00        0.  334  12   A31   .01
    3434   58B     7.5      11.52      10.9     12.99   1     673.   .03337      .00   .00        0.  334  12   A31   .01
    3434   59B    12.9      18.93      23.8     27.48   1     656.   .03216      .00   .00        0.  334  12   A30   .01
    3434   60B    20.5      21.85      44.3     45.72   1     893.   .02686      .00   .00        0.  334  18   A29   .01
    3434   61B     9.2      12.87      53.5     46.17   1     531.   .02277      .00   .00        0.  334  12   A29   .01
    3434   62B     9.3      14.72      62.8     47.80   1     496.   .03109      .00   .00        0.  334  10   A29   .01
    3434   63B     9.0      15.13      71.8     49.36   1     458.   .03953      .00   .00        0.  334   9   A29   .01
    3434   64B     8.1      10.81      79.9     57.44   1     416.   .00951      .00   .00        0.  334  12   A28   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   65A  TA 1185 QA   772.11 QAB   817.60 QB    45.49    3434   65B  TB 1164 QB    54.85 QBA   334.13 QA   279.29   *
*                                3434   65AB TAB 1185 QAB   817.60 QA   772.11 QB    45.49                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   65AB   79.9      54.85     733.5    817.60   0       0.   .00000      .00   .00        0.  334   0   A28   .00

 Program Package Serial Number:  2173
04/19/10   FILE: AREA2    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     4
                                   LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                      PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   66A      .0        .00     733.5    817.60   0       0.   .00000      .00   .00        0.  334  99   A28   .00
    3434   67B    10.2      11.82      10.2     11.82   1     834.   .02935      .00   .00        0.  334  16   A29   .01
    3434   68B    17.2      28.92      27.4     33.04   1     436.   .03224      .00   .00        0.  334   9   A29   .01
    3434   69B    18.7      23.65      46.1     54.57   1     566.   .02234      .00   .00        0.  334  13   A28   .01
    3434   70B    46.8      56.38      92.9    100.37   1     644.   .02458      .00   .00        0.  334  14   A28   .01
    3434   71B      .0        .00      92.9     98.08   2    1885.   .00129      .00   .00        0.  334   5   A28   .00
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   72A  TA 1185 QA   817.60 QAB   877.44 QB    59.84    3434   72B  TB 1184 QB    59.85 QBA   870.73 QA   810.88   *
*                                3434   72AB TAB 1185 QAB   877.44 QA   817.60 QB    59.84                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   72AB   92.9      59.85     826.4    877.44   0       0.   .00000      .00   .00        0.  334   0   A28   .00
    3434   73A      .0        .00     826.4    877.44   0       0.   .00000      .00   .00        0.  334  99   A28   .00
    3434   74A    22.8      15.73     849.2    882.28   2    1259.   .02178      .00   .00        0.  334  30   A28   .01
    3434   75B     6.9      11.85       6.9     11.85   2     347.   .03217      .00   .00        0.  334   8   A28   .01
    3434   76B    10.5      10.21      17.4     21.79   2     831.   .02383      .00   .00        0.  334  19   A28   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   77A  TA 1187 QA   877.24 QAB   880.56 QB     3.32    3434   77B  TB 1160 QB    20.28 QBA   312.93 QA   292.65   *
*                                3434   77AB TAB 1187 QAB   880.56 QA   877.24 QB     3.32                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
```

3434	77AB	17.4	20.28	866.6	880.56	0	0.	.00000	.00	.00	0.	334	0	A28	.00
3434	78A	.0	.00	866.6	880.56	0	0.	.00000	.00	.00	0.	334	99	A28	.00
3434	79A	30.7	19.95	897.3	886.36	2	923.	.02043	.00	.00	0.	334	30	A27	.01
3434	80A	11.6	7.54	908.9	885.10	2	1385.	.01322	.00	.00	0.	334	30	A27	.01
3434	81B	6.8	7.86	6.8	7.86	2	724.	.02532	.00	.00	0.	334	15	A28	.01
3434	82B	13.5	8.77	20.3	16.11	2	1285.	.02168	.00	.00	0.	334	30	A27	.01

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*                                                    CONFLUENCE Q'S                                                          *
*   3434   83A  TA 1192 QA   874.68 QAB   879.94 QB     5.26    3434   83B  TB 1168 QB    15.16 QBA   378.32 QA   363.16   *
*                              3434   83AB TAB 1192 QAB   879.94 QA   874.68 QB     5.26                                    *
```

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	83AB	20.3	15.16	929.2	879.94	0	0.	.00000	.00	.00	0.	334	0	A27	.00
3434	84A	.0	.00	929.2	879.94	0	0.	.00000	.00	.00	0.	334	99	A27	.00
3434	85A	15.2	9.88	944.4	882.44	2	993.	.01750	.00	.00	0.	334	30	A27	.01
3434	86A	16.0	9.72	960.4	880.76	2	1164.	.01583	.00	.00	0.	334	30	A26	.01
3434	87A	11.7	7.11	972.1	877.57	2	1084.	.01507	.00	.00	0.	334	30	A26	.01
3434	88B	4.5	5.42	4.5	5.42	2	635.	.02460	.00	.00	0.	334	14	A28	.01
3434	89B	6.4	6.47	10.9	11.26	2	842.	.02703	.00	.00	0.	334	18	A28	.01
3434	90B	12.5	8.12	23.4	18.67	2	1181.	.02378	.00	.00	0.	334	30	A27	.01

Program Package Serial Number: 2173

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	91B	10.6	6.89	34.0	23.97	2	994.	.01949	.00	.00	0.	334	30	A27	.01
3434	92B	8.8	5.72	42.8	27.83	2	903.	.01708	.00	.00	0.	334	30	A27	.01
3434	93B	5.2	3.16	48.0	29.67	2	829.	.01516	.00	.00	0.	334	30	A26	.01

```
*                                                    CONFLUENCE Q'S                                                          *
*   3434   94A  TA 1198 QA   872.90 QAB   890.50 QB    17.60    3434   94B  TB 1181 QB    29.29 QBA   480.04 QA   450.75   *
*                              3434   94AB TAB 1198 QAB   890.50 QA   872.90 QB    17.60                                   *
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	94AB	48.0	29.29	1020.1	890.50	0	0.	.00000	.00	.00	0.	334	0	A26	.00
3434	95A	.0	.00	1020.1	890.50	0	0.	.00000	.00	.00	0.	334	99	A26	.00
3434	96A	12.0	7.29	1032.1	892.18	2	838.	.01013	.00	.00	0.	334	30	A26	.01
3434	97A	5.7	3.46	1037.8	888.97	2	855.	.01310	.00	.00	0.	334	30	A26	.01
3434	98A	1.2	.65	1039.0	885.65	2	442.	.00831	.00	.00	0.	324	30	A25	.01
3434	99B	9.3	6.04	9.3	6.04	2	998.	.01536	.00	.00	0.	334	30	A27	.01
3434	100B	15.7	9.54	25.0	14.61	2	1390.	.01547	.00	.00	0.	334	30	A26	.01
3434	101B	18.3	11.11	43.3	23.19	2	1139.	.01683	.00	.00	0.	334	30	A26	.01
3434	102B	25.4	15.43	68.7	35.13	2	1059.	.01385	.00	.00	0.	334	30	A26	.01
3434	103B	17.7	10.01	86.4	42.82	2	931.	.01281	.00	.00	0.	334	30	A25	.01

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*                                                    CONFLUENCE Q'S                                                          *
*   3434  104A  TA 1203 QA   883.63 QAB   907.47 QB    23.84    3434  104B  TB 1178 QB    42.54 QBA   422.37 QA   379.84   *
*                              3434  104AB TAB 1203 QAB   907.47 QA   883.63 QB    23.84                                   *
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	104AB	86.4	42.54	1125.4	907.47	0	0.	.00000	.00	.00	0.	324	0	A25	.00
3434	105A	.0	.00	1125.4	907.47	0	0.	.00000	.00	.00	0.	324	99	A25	.00
3434	106A	16.4	8.93	1141.8	909.56	2	811.	.01185	.00	.00	0.	324	30	A25	.01
3434	107A	16.0	8.37	1157.8	908.01	2	1071.	.01048	.00	.00	0.	324	30	A24	.01
3434	108A	13.5	7.08	1171.3	902.70	2	1180.	.00865	.00	.00	0.	334	30	A24	.01
3434	109B	4.7	13.64	4.7	13.64	1	249.	.21274	.00	.00	0.	334	5	A33	.01
3434	110B	12.7	21.22	17.4	33.92	1	941.	.07483	.00	.00	0.	334	12	A33	.01
3434	111B	12.2	11.96	29.6	41.39	1	1503.	.02325	.00	.00	0.	334	25	A32	.01

3434	112B	31.6	24.40	61.2	53.16	1	1950.	.02481	.00	.00	0.	334	30	A30	.01
3434	113B	25.6	32.44	86.8	51.82	1	732.	.03272	.00	.00	0.	334	14	A29	.01
3434	114B	27.2	31.51	114.0	78.28	1	826.	.02638	.00	.00	0.	334	16	A29	.01
3434	115B	19.7	18.81	133.7	92.53	2	968.	.02227	.00	.00	0.	334	21	A29	.01
3434	116B	12.7	12.35	146.4	100.34	2	830.	.02372	.00	.00	0.	334	19	A28	.01
3434	117B	15.2	10.49	161.6	108.62	2	1193.	.02652	.00	.00	0.	334	30	A28	.01
3434	118B	7.2	4.97	168.8	111.10	2	1110.	.01755	.00	.00	0.	334	30	A28	.01
3434	119C	10.3	13.75	10.3	13.75	2	507.	.02527	.00	.00	0.	334	12	A28	.01
3434	120C	12.5	8.62	22.8	21.97	2	1321.	.01914	.00	.00	0.	334	30	A28	.01

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

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                                                                                                                                                STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV      CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
   LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
*****************************************************************************************************************************
*                                                          CONFLUENCE Q'S                                                   *
*   3434  121B  TB 1176 QB   109.27 QBC   122.09 QC    12.82    3434  121C  TC 1166 QC    19.84 QCB    98.62 QB    78.77   *
*                                 3434  121BC TBC 1175 QBC   122.66 QB   109.15 QC    13.52                                 *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV      CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
   LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
   3434  121BC    22.8      19.84     191.6    122.66   0       0.   .00000      .00   .00        0.  334   0   A27   .00
   3434  122B      .0        .00     191.6    122.66   0       0.   .00000      .00   .00        0.  334  99   A27   .00
   3434  123B    12.5       8.12     204.1    128.58   2     888.   .01680      .00   .00        0.  334  30   A27   .01
   3434  124C     8.3      11.76       8.3     11.76   2     484.   .02702      .00   .00        0.  334  11   A28   .01
   3434  125C    15.5      14.03      23.8     25.33   2     961.   .02641      .00   .00        0.  334  21   A28   .01
   3434  126C    22.0      15.18      45.8     39.21   2    1258.   .02513      .00   .00        0.  334  30   A28   .01
   3434  127C    18.1      11.76      63.9     48.47   2    1117.   .01701      .00   .00        0.  334  30   A27   .01
   3434  128C     9.8       6.94      73.7     52.33   2     820.   .01625      .00   .00        0.  334  27   A27   .01
*****************************************************************************************************************************
*                                                          CONFLUENCE Q'S                                                   *
*   3434  129B  TB 1178 QB   127.55 QBC   177.67 QC    50.13    3434  129C  TC 1175 QC    51.56 QCB   176.62 QB   125.06   *
*                                 3434  129BC TBC 1177 QBC   178.40 QB   127.48 QC    50.92                                 *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV      CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
   LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
   3434  129BC    73.7      51.56     277.8    178.40   0       0.   .00000      .00   .00        0.  334   0   A27   .00
   3434  130B      .0        .00     277.8    178.40   0       0.   .00000      .00   .00        0.  334  99   A27   .00
   3434  131B    18.6      12.09     296.4    186.67   2     912.   .01467      .00   .00        0.  334  30   A27   .01
   3434  132B    18.7      11.36     315.1    192.34   2    1274.   .01221      .00   .00        0.  334  30   A26   .01
   3434  133B    17.4       9.85     332.5    193.33   2    1103.   .01178      .00   .00        0.  324  30   A26   .01
   3434  134B    10.8       5.88     343.3    193.45   2    1118.   .01170      .00   .00        0.  324  30   A25   .01
   3434  135C     6.4       3.48       6.4      3.48   2    1001.   .01083      .00   .00        0.  324  30   A25   .01
   3434  136C     7.9       4.30      14.3      7.23   2     833.   .01192      .00   .00        0.  324  30   A25   .01
*****************************************************************************************************************************
*                                                          CONFLUENCE Q'S                                                   *
*   3434  137B  TB 1191 QB   191.63 QBC   196.63 QC     5.00    3434  137C  TC 1175 QC     7.10 QCB   135.84 QB   128.74   *
*                                 3434  137BC TBC 1190 QBC   196.65 QB   191.46 QC     5.20                                 *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV      CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
   LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
   3434  137BC    14.3       7.10     357.6    196.65   0       0.   .00000      .00   .00        0.  324   0   A25   .00
   3434  138B      .0        .00     357.6    196.65   0       0.   .00000      .00   .00        0.  324  99   A25   .00
   3434  139B    19.9      10.40     377.5    199.76   2    1293.   .01079      .00   .00        0.  324  30   A24   .01
*****************************************************************************************************************************
*                                                          CONFLUENCE Q'S                                                   *
*   3434  140A  TA 1211 QA   893.63 QAB  1037.31 QB   143.68    3434  140B  TB 1195 QB   197.43 QBA   721.87 QA   524.45   *
*                                 3434  140AB TAB 1210 QAB  1041.02 QA   893.12 QB   147.91                                 *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV      CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
   LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
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 Program Package Serial Number:  2173
04/19/10   FILE: AREA2    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     7
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                      PROG F0601M

      Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  140AB   377.5     197.43    1548.8   1041.02   0       0.   .00000      .00   .00        0.  334   0   A 0   .00
    3434  141A      .0        .00    1548.8   1041.02   0       0.   .00000      .00   .00        0.  334  99   A 0   .00
    3434  142A    26.7      13.99    1575.5   1043.95   2    1237.   .00746      .00   .00        0.  334  30   A24   .01
    3434  143A    22.5      11.02    1598.0   1036.08   2    1253.   .00681      .00   .00        0.  334  30   A23   .01
    3434  144A    11.4       5.59    1609.4   1027.30   2    1053.   .00644      .00   .00        0.  334  30   A23   .01
    3434  145A     2.8       1.37    1612.2   1020.48   2     455.   .00290      .00   .00        0.  334  30   A23   .01
    3434  146B     5.5       3.11       5.5      3.11   2     845.   .01594      .00   .00        0.  334  30   A25   .01
    3434  147B    11.9       6.73      17.4      9.34   2     960.   .01224      .00   .00        0.  334  30   A25   .01
    3434  148B    21.1      11.06      38.5     19.03   2    1305.   .01095      .00   .00        0.  334  30   A24   .01
    3434  149B    17.1       8.96      55.6     25.76   2    1173.   .00987      .00   .00        0.  334  30   A24   .01
    3434  150B    17.3       9.07      72.9     31.66   2    1140.   .00683      .00   .00        0.  334  30   A24   .01
    3434  151B    12.4       6.07      85.3     34.05   2    1026.   .00827      .00   .00        0.  334  30   A23   .01
    3434  152B    14.4       7.05      99.7     36.39   2    1356.   .00672      .00   .00        0.  334  30   A23   .01
*****************************************************************************************************************************
*                                                      CONFLUENCE Q'S                                                       *
*   3434  153A  TA 1222 QA  1017.81 QAB  1044.16 QB    26.36    3434  153B  TB 1193 QB    35.56 QBA   544.14 QA   508.58   *
*                                 3434  153AB TAB 1222 QAB  1044.16 QA  1017.81 QB    26.36                                 *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  153AB   99.7      35.56    1711.9   1044.16   0       0.   .00000      .00   .00        0.  334   0   A22   .00
    3434  154A      .0        .00    1711.9   1044.16   0       0.   .00000      .00   .00        0.  334  99   A22   .00
    3434  155A     6.8       3.19    1718.7   1044.77   2    1038.   .00510      .00   .00        0.  334  30   A22   .01

 Program Package Serial Number:  2173
04/19/10   FILE: AREA2    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     8
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                      PROG F0601M

      Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  156B     9.7      11.08       9.7     11.08   2     481.   .01278      .00   .00        0.  334  14   A27   .01
    3434  157B     9.4       6.11      19.1     16.68   2     992.   .02103      .00   .00        0.  334  30   A27   .01
    3434  158C    13.3      18.85      13.3     18.85   2     471.   .02540      .00   .00        0.  334  11   A28   .01
    3434  159C    12.6       8.19      25.9     26.50   2     982.   .02330      .00   .00        0.  334  30   A27   .01
*****************************************************************************************************************************
*                                                      CONFLUENCE Q'S                                                       *
*   3434  160B  TB 1166 QB    15.80 QBC    38.10 QC    22.30    3434  160C  TC 1163 QC    24.88 QCB    39.99 QB    15.11   *
*                                 3434  160BC TBC 1163 QBC    39.99 QB    15.11 QC    24.88                                 *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  160BC   25.9      24.88      45.0     39.99   0       0.   .00000      .00   .00        0.  334   0   A27   .00
    3434  161B      .0        .00      45.0     39.99   0       0.   .00000      .00   .00        0.  334  99   A27   .00
    3434  162B    14.3       9.29      59.3     49.01   2    1008.   .01980      .00   .00        0.  334  30   A27   .01
    3434  163B    21.3      12.94      80.6     59.07   2    1171.   .01921      .00   .00        0.  334  30   A26   .01
    3434  164B    20.3      12.33     100.9     67.15   2    1183.   .01895      .00   .00        0.  334  30   A26   .01
    3434  165B     9.1       5.15     110.0     69.59   2    1032.   .01497      .00   .00        0.  334  30   A25   .01
    3434  166C     8.9      10.69       8.9     10.69   2     517.   .02021      .00   .00        0.  334  13   A27   .01
    3434  167C    11.3       6.86      20.2     17.13   2    1220.   .01689      .00   .00        0.  334  30   A26   .01
    3434  168C    19.9      12.09      40.1     26.71   2    1291.   .01541      .00   .00        0.  334  30   A26   .01
    3434  169C    13.6       7.69      53.7     31.77   2    1191.   .01518      .00   .00        0.  334  30   A25   .01
*****************************************************************************************************************************
*                                                      CONFLUENCE Q'S                                                       *
*   3434  170B  TB 1181 QB    68.30 QBC    98.80 QC    30.50    3434  170C  TC 1179 QC    30.92 QCB    98.75 QB    67.83   *
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*                                3434  170BC TBC 1180 QBC    99.07 QB    68.29 QC    30.77                                    *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV      CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  170BC    53.7      30.92     163.7     99.07   0       0.   .00000      .00   .00        0.  334   0   A25   .00
    3434  171B      .0        .00     163.7     99.07   0       0.   .00000      .00   .00        0.  334  99   A25   .00
    3434  172C    16.1      20.39      16.1     20.39   2     431.   .02130      .00   .00        0.  334  12   A27   .01
    3434  173C    31.2      20.27      47.3     40.19   2    1204.   .02320      .00   .00        0.  334  30   A27   .01
    3434  174C    24.8      15.06      72.1     52.86   2    1096.   .01948      .00   .00        0.  334  30   A26   .01
    3434  175C    22.3      13.54      94.4     63.57   2    1184.   .02112      .00   .00        0.  334  30   A26   .01
    3434  176C    10.7       6.05     105.1     67.18   2    1135.   .01611      .00   .00        0.  334  30   A25   .01
    3434  177D    11.3      10.79      11.3     10.79   2     751.   .02682      .00   .00        0.  334  18   A27   .01
    3434  178D    24.6      15.98      35.9     26.32   2    1240.   .02308      .00   .00        0.  334  30   A27   .01
    3434  179D    21.7      13.18      57.6     37.60   2    1095.   .02002      .00   .00        0.  334  30   A26   .01
    3434  180D    26.9      15.21      84.5     49.98   2    1307.   .01959      .00   .00        0.  334  30   A25   .01
    3434  181D    21.7      12.27     106.2     58.89   2    1222.   .01335      .00   .00        0.  334  30   A25   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  182C  TC 1176 QC    65.70 QCD   122.42 QD    56.72    3434  182D  TD 1180 QD    57.96 QDC   121.29 QC    63.33   *
*                                3434  182CD TCD 1177 QCD   122.95 QC    65.65 QD    57.30                                    *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV      CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV

 Program Package Serial Number:  2173
04/19/10   FILE: AREA2    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     9
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                      PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                          STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV      CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  182CD   106.2      57.96     211.3    122.95   0       0.   .00000      .00   .00        0.  334   0   A25   .00
    3434  183C      .0        .00     211.3    122.95   0       0.   .00000      .00   .00        0.  334  99   A25   .00
    3434  184C    21.5      12.16     232.8    131.81   2     785.   .00872      .00   .00        0.  334  30   A25   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  185B  TB 1180 QB    99.07 QBC   229.65 QC   130.58    3434  185C  TC 1180 QC   130.58 QCB   229.65 QB    99.07   *
*                                3434  185BC TBC 1180 QBC   229.65 QB    99.07 QC   130.58                                    *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV      CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  185BC   232.8     130.58     396.5    229.65   0       0.   .00000      .00   .00        0.  334   0   A25   .00
    3434  186B      .0        .00     396.5    229.65   0       0.   .00000      .00   .00        0.  334  99   A25   .00
    3434  187B    26.3      14.87     422.8    238.18   2     946.   .00932      .00   .00        0.  334  30   A25   .01
    3434  188B    16.6       8.70     439.4    239.56   2    1028.   .01114      .00   .00        0.  334  30   A24   .01
    3434  189B    12.2       6.39     451.6    239.87   2    1194.   .00944      .00   .00        0.  334  30   A24   .01
    3434  190B     8.0       4.19     459.6    238.43   2    1324.   .00808      .00   .00        0.  334  30   A24   .01
    3434  191C    12.3       7.47      12.3      7.47   2    1245.   .01518      .00   .00        0.  334  30   A26   .01
    3434  192C    25.1      14.19      37.4     20.07   2    1320.   .01364      .00   .00        0.  334  30   A25   .01
    3434  193C    21.8      12.33      59.2     29.81   2    1014.   .01300      .00   .00        0.  334  30   A25   .01
    3434  194C    16.2       8.49      75.4     36.43   2    1053.   .01108      .00   .00        0.  334  30   A24   .01
    3434  195C     8.2       4.30      83.6     39.03   2    1156.   .00825      .00   .00        0.  334  30   A24   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  196B  TB 1196 QB   235.10 QBC   268.60 QC    33.50    3434  196C  TC 1185 QC    38.12 QCB   230.77 QB   192.65   *
*                                3434  196BC TBC 1195 QBC   268.89 QB   234.69 QC    34.19                                    *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV      CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  196BC    83.6      38.12     543.2    268.89   0       0.   .00000      .00   .00        0.  334   0   A23   .00
    3434  197B      .0        .00     543.2    268.89   0       0.   .00000      .00   .00        0.  334  99   A23   .00
    3434  198B     8.1       3.97     551.3    269.95   2     844.   .01054      .00   .00        0.  334  30   A23   .01
    3434  199C     9.3       6.78       9.3      6.78   2     768.   .02460      .00   .00        0.  334  24   A26   .01
    3434  200C    16.3       9.90      25.6     16.28   2     992.   .02284      .00   .00        0.  334  30   A26   .01
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3434	201C	14.7	8.31	40.3	23.55	2	1104.	.01677	.00	.00	0.	334	30	A25	.01
3434	202C	13.5	7.63	53.8	29.38	2	1176.	.01333	.00	.00	0.	334	30	A25	.01
3434	203C	16.6	8.70	70.4	35.31	2	1304.	.01164	.00	.00	0.	334	30	A24	.01
3434	204C	18.2	9.54	88.6	40.11	2	1076.	.01273	.00	.00	0.	334	30	A24	.01
3434	205C	17.8	9.33	106.4	44.18	2	1017.	.00909	.00	.00	0.	334	30	A24	.01
3434	206C	14.6	7.65	121.0	46.93	2	1273.	.00881	.00	.00	0.	334	30	A24	.01
3434	207C	11.4	5.59	132.4	48.03	2	981.	.00747	.00	.00	0.	334	30	A23	.01
3434	208C	11.2	5.49	143.6	49.35	2	917.	.01030	.00	.00	0.	334	30	A23	.01

Program Package Serial Number: 2173

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

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                                                                                                                                                STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
LOCATION          AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  209B  TB 1198 QB   268.91 QBC   318.16 QC    49.25    3434  209C  TC 1198 QC    49.25 QCB   318.16 QB   268.91   *
*                              3434  209BC TBC 1198 QBC   318.16 QB   268.91 QC    49.25                                   *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
LOCATION          AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
3434  209BC       143.6      49.25     694.9    318.16   0       0.   .00000      .00   .00        0.  334   0   A23   .00
3434  210B          .0        .00     694.9    318.16   0       0.   .00000      .00   .00        0.  334  99   A23   .00
3434  211B        19.9       9.75     714.8    320.63   2    1098.   .00735      .00   .00        0.  334  30   A23   .01
3434  212B        22.1      10.83     736.9    321.16   2    1084.   .00864      .00   .00        0.  334  30   A23   .01
3434  213B        18.8       9.21     755.7    321.63   2     995.   .00756      .00   .00        0.  334  30   A23   .01
3434  214B        15.2       7.14     770.9    321.64   2     893.   .00543      .00   .00        0.  334  30   A22   .01
3434  215C         3.3       1.73       3.3      1.73   2     830.   .01087      .00   .00        0.  334  30   A24   .01
3434  216C         5.2       2.55       8.5      3.98   2    1145.   .00747      .00   .00        0.  334  30   A23   .01
3434  217C         5.7       2.79      14.2      5.85   2    1115.   .00860      .00   .00        0.  334  30   A23   .01
3434  218C         7.6       3.72      21.8      8.21   2     988.   .00779      .00   .00        0.  334  30   A23   .01
3434  219C         5.8       2.72      27.6      9.81   2     954.   .00452      .00   .00        0.  334  30   A22   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  220B  TB 1214 QB   320.08 QBC   327.41 QC     7.33    3434  220C  TC 1187 QC     9.42 QCB   217.23 QB   207.81   *
*                              3434  220BC TBC 1214 QBC   327.41 QB   320.08 QC     7.33                                    *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
LOCATION          AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
3434  220BC        27.6       9.42     798.5    327.41   0       0.   .00000      .00   .00        0.  334   0   A22   .00
3434  221B          .0        .00     798.5    327.41   0       0.   .00000      .00   .00        0.  334  99   A22   .00
3434  222B         6.7       3.15     805.2    328.05   2     625.   .00600      .00   .00        0.  334  30   A22   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  223A  TA 1225 QA  1037.12 QAB  1342.51 QB   305.39    3434  223B  TB 1216 QB   327.32 QBA  1181.48 QA   854.16   *
*                              3434  223AB TAB 1224 QAB  1343.62 QA  1034.03 QB   309.60                                    *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL       RAIN  PCT
LOCATION          AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
3434  223AB       805.2     327.32    2523.9   1343.62   0       0.   .00000      .00   .00        0.  334   0   A22   .00
3434  224A          .0        .00    2523.9   1343.62   0       0.   .00000      .00   .00        0.  334  99   A22   .00
3434  225A        18.8       8.83    2542.7   1345.26   2     799.   .00880      .00   .00        0.  334  30   A22   .01
3434  226A        17.2       8.08    2559.9   1344.49   2     822.   .00780      .00   .00        0.  334  30   A22   .01
3434  227A        10.2       4.79    2570.1   1342.70   2    1130.   .00360      .00   .00        0.  334  30   A22   .01
3434  228A         9.3       4.37    2579.4   1333.53   2    1122.   .00430      .00   .00        0.  334  30   A22   .01
3434  229A        12.0       5.63    2591.4   1326.09   2    1139.   .00970      .00   .00        0.  334  30   A22   .01
3434  230A          .0        .00    2591.4   1323.00   0       0.   .00000      .00   .00        0.  334  99   A22   .00
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 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     1
                                       LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M

     Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                  STORM DAY 4
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434    1A    12.3      47.45      12.3     47.45   1     541.   .15141      .00   .00        0.  320   5   A38   .01
    3434    2A    30.7      59.10      43.0    102.08   1    1689.   .13251      .00   .00        0.  334  13   A38   .01
    3434    3A    35.3      58.02      78.3    147.59   1    1702.   .11474      .00   .00        0.  334  15   A36   .01
    3434    4B     9.0      23.14       9.0     23.14   1     884.   .15566      .00   .00        0.  334   8   A38   .01
    3434    5B    25.2      52.07      34.2     71.36   1    1509.   .21074      .00   .00        0.  334  11   A37   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434    6A  TA 1162 QA   140.50 QAB   203.35 QB    62.85    3434    6B  TB 1159 QB    68.83 QBA   190.18 QA   121.35   *
*                                3434    6AB TAB 1161 QAB   204.63 QA   137.69 QB    66.93                                 *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434    6AB   34.2      68.83     112.5    204.63   0       0.   .00000      .00   .00        0.  334   0   A36   .00
    3434    7A     .0        .00     112.5    204.63   0       0.   .00000      .00   .00        0.  334  99   A36   .00
    3434    8A    41.8      88.79     154.3    256.36   1    1114.   .15099      .00   .00        0.  334  10   A36   .01
    3434    9A    27.1      44.28     181.4    290.27   1    1090.   .09619      .00   .00        0.  324  13   A36   .01
    3434   10B     6.5      21.01       6.5     21.01   1     430.   .42604      .00   .00        0.  334   5   A36   .01
    3434   11B    15.9      35.76      22.4     55.20   1    1112.   .21130      .00   .00        0.  334   9   A36   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   12A  TA 1162 QA   286.06 QAB   314.83 QB    28.77    3434   12B  TB 1157 QB    51.42 QBA   263.93 QA   212.50   *
*                                3434   12AB TAB 1162 QAB   314.83 QA   286.06 QB    28.77                                 *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   12AB   22.4      51.42     203.8    314.83   0       0.   .00000      .00   .00        0.  324   0   A35   .00
    3434   13A     .0        .00     203.8    314.83   0       0.   .00000      .00   .00        0.  324  99   A35   .00
    3434   14A    21.2      33.28     225.0    340.86   1     885.   .05754      .00   .00        0.  324  13   A35   .01
    3434   15A    11.5      18.05     236.5    346.76   1     872.   .05423      .00   .00        0.  324  13   A35   .01
    3434   16B    11.3      22.67      11.3     22.67   1     811.   .16661      .00   .00        0.  324   9   A35   .01
    3434   17B    15.1      19.76      26.4     41.10   1    1461.   .13071      .00   .00        0.  324  17   A35   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   18A  TA 1165 QA   343.00 QAB   377.93 QB    34.93    3434   18B  TB 1162 QB    38.26 QBA   354.34 QA   316.08   *
*                                3434   18AB TAB 1165 QAB   377.93 QA   343.00 QB    34.93                                 *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   18AB   26.4      38.26     262.9    377.93   0       0.   .00000      .00   .00        0.  324   0   A35   .00
    3434   19A     .0        .00     262.9    377.93   0       0.   .00000      .00   .00        0.  324  99   A35   .00
    3434   20A     4.1       7.90     267.0    379.35   1     569.   .07099      .00   .00        0.  324   9   A34   .01
    3434   21B     2.8       8.29       2.8      8.29   1     346.   .23394      .00   .00        0.  324   5   A35   .01
    3434   22B     7.2      10.76      10.0     18.17   1    1221.   .12821      .00   .00        0.  324  14   A35   .01

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     2
                                       LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M

     Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                  STORM DAY 4
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   23A  TA 1166 QA   377.71 QAB   389.14 QB    11.43    3434   23B  TB 1160 QB    15.40 QBA   286.65 QA   271.25   *
*                                3434   23AB TAB 1166 QAB   389.14 QA   377.71 QB    11.43                                 *
*****************************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	23AB	10.0	15.40	277.0	389.14	0	0.	.00000	.00	.00	0.	324	0	A34	.00
3434	24A	.0	.00	277.0	389.14	0	0.	.00000	.00	.00	0.	324	99	A34	.00
3434	25B	8.0	14.51	8.0	14.51	1	703.	.08349	.00	.00	0.	324	10	A34	.01

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* CONFLUENCE Q'S *

* 3434 26A TA 1166 QA 389.14 QAB 395.70 QB 6.55 3434 26B TB 1159 QB 13.32 QBA 268.88 QA 255.56 *

* 3434 26AB TAB 1166 QAB 395.70 QA 389.14 QB 6.55 *

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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	26AB	8.0	13.32	285.0	395.70	0	0.	.00000	.00	.00	0.	324	0	A34	.00
3434	27A	.0	.00	285.0	395.70	0	0.	.00000	.00	.00	0.	324	99	A34	.00
3434	28A	9.8	18.88	294.8	398.89	1	581.	.06721	.00	.00	0.	324	9	A34	.01
3434	29A	11.6	15.18	306.4	403.96	1	1068.	.06672	.00	.00	0.	324	16	A34	.01
3434	30A	12.8	16.80	319.2	404.56	1	908.	.05324	.00	.00	0.	324	15	A33	.01
3434	31A	15.0	17.99	334.2	405.62	1	808.	.04483	.00	.00	0.	324	16	A32	.01
3434	32B	5.4	12.66	5.4	12.66	1	438.	.08768	.00	.00	0.	324	7	A35	.01
3434	33B	7.1	8.56	12.5	20.47	1	986.	.03490	.00	.00	0.	324	18	A34	.01
3434	34B	9.2	13.85	21.7	26.08	1	794.	.04285	.00	.00	0.	324	13	A34	.01
3434	35B	10.5	16.68	32.2	33.21	1	739.	.04034	.00	.00	0.	324	12	A34	.01
3434	36B	21.2	25.44	53.4	53.53	1	892.	.03824	.00	.00	0.	324	17	A33	.01
3434	37B	28.0	30.80	81.4	76.32	1	884.	.04316	.00	.00	0.	324	18	A32	.01
3434	38B	35.9	39.50	117.3	104.51	1	894.	.04287	.00	.00	0.	324	18	A32	.01
3434	39B	44.0	37.97	161.3	135.53	1	933.	.03160	.00	.00	0.	324	24	A31	.01
3434	40B	.0	.00	161.3	134.18	2	2066.	.00005	.00	.00	0.	324	5	A31	.00
3434	41C	10.4	24.95	10.4	24.95	1	855.	.20664	.00	.00	0.	334	8	A36	.01
3434	42C	10.9	22.81	21.3	45.05	1	767.	.15958	.00	.00	0.	324	9	A36	.01
3434	43C	12.7	23.98	34.0	65.06	1	896.	.15339	.00	.00	0.	324	10	A35	.01
3434	44D	8.9	16.32	8.9	16.32	1	1083.	.21389	.00	.00	0.	324	11	A36	.01

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* CONFLUENCE Q'S *

* 3434 45C TC 1160 QC 63.14 QCD 78.32 QD 15.17 3434 45D TD 1159 QD 15.36 QDC 78.45 QC 63.09 *

* 3434 45CD TCD 1159 QCD 78.45 QC 63.09 QD 15.36 *

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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	45CD	8.9	15.36	42.9	78.45	0	0.	.00000	.00	.00	0.	324	0	A35	.00
3434	46C	.0	.00	42.9	78.45	0	0.	.00000	.00	.00	0.	324	99	A35	.00
3434	47C	2.0	4.31	44.9	80.50	1	586.	.08664	.00	.00	0.	324	8	A35	.01

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	48D	7.4	19.98	7.4	19.98	1	491.	.17498	.00	.00	0.	324	6	A36	.01
3434	49D	21.3	27.88	28.7	47.00	1	1488.	.13975	.00	.00	0.	324	17	A35	.01

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* CONFLUENCE Q'S *

* 3434 50C TC 1161 QC 79.29 QCD 120.54 QD 41.25 3434 50D TD 1160 QD 42.10 QDC 119.86 QC 77.76 *

* 3434 50CD TCD 1161 QCD 120.54 QC 79.29 QD 41.25 *

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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	50CD	28.7	42.10	73.6	120.54	0	0.	.00000	.00	.00	0.	324	0	A35	.00
3434	51C	.0	.00	73.6	120.54	0	0.	.00000	.00	.00	0.	324	99	A35	.00
3434	52D	4.2	12.44	4.2	12.44	1	205.	.15151	.00	.00	0.	324	5	A35	.01
3434	53D	7.8	16.81	12.0	28.36	1	598.	.09980	.00	.00	0.	324	8	A35	.01

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* CONFLUENCE Q'S *

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*   3434   54C  TC 1161 QC   120.54 QCD   135.66 QD    15.12    3434   54D  TD 1157 QD    26.13 QDC   121.43 QC    95.30   *
*                                3434   54CD TCD 1160 QCD   138.23 QC   119.86 QD    18.37                                  *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   54CD   12.0      26.13      85.6    138.23   0       0.   .00000      .00   .00        0.  324   0   A35   .00
    3434   55C      .0        .00      85.6    138.23   0       0.   .00000      .00   .00        0.  324  99   A35   .00
    3434   56C    36.8      32.41     122.4    170.63   1    1926.   .04616      .00   .00        0.  324  30   A35   .01
    3434   57D     4.4      10.32       4.4     10.32   1     509.   .12065      .00   .00        0.  324   7   A35   .01
    3434   58D     7.8      11.16      12.2     20.63   1     978.   .06881      .00   .00        0.  324  14   A34   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   59C  TC 1166 QC   152.33 QCD   167.53 QD    15.19    3434   59D  TD 1162 QD    18.26 QDC   142.71 QC   124.44   *
*                                3434   59CD TCD 1166 QCD   167.53 QC   152.33 QD    15.19                                  *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   59CD   12.2      18.26     134.6    167.53   0       0.   .00000      .00   .00        0.  324   0   A34   .00
    3434   60C      .0        .00     134.6    167.53   0       0.   .00000      .00   .00        0.  324  99   A34   .00
    3434   61C     8.4      17.40     143.0    170.17   1     470.   .07090      .00   .00        0.  324   8   A34   .01
    3434   62D     3.8       8.91       3.8      8.91   1     485.   .09748      .00   .00        0.  324   7   A35   .01
    3434   63D     7.3      11.59      11.1     19.53   1     744.   .04248      .00   .00        0.  324  12   A34   .01
    3434   64D     7.6      10.88      18.7     26.37   1     871.   .04806      .00   .00        0.  324  14   A34   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   65C  TC 1167 QC   169.13 QCD   193.07 QD    23.93    3434   65D  TD 1166 QD    24.49 QDC   191.34 QC   166.85   *
*                                3434   65CD TCD 1167 QCD   193.07 QC   169.13 QD    23.93                                  *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   65CD   18.7      24.49     161.7    193.07   0       0.   .00000      .00   .00        0.  324   0   A34   .00

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     4
                                   LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                      PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                  STORM DAY 4
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   66C      .0        .00     161.7    193.07   0       0.   .00000      .00   .00        0.  324  99   A34   .00
    3434   67C    22.2      35.26     183.9    200.75   1     693.   .05228      .00   .00        0.  324  12   A34   .01
    3434   68C    26.7      32.03     210.6    211.81   1     827.   .02618      .00   .00        0.  324  17   A33   .01
    3434   69D     8.2      19.23       8.2     19.23   1     547.   .18618      .00   .00        0.  324   7   A35   .01
    3434   70D    17.8      33.61      26.0     51.30   1     780.   .10566      .00   .00        0.  324  10   A35   .01
    3434   71D    19.7      31.29      45.7     78.47   1     878.   .09542      .00   .00        0.  324  12   A34   .01
    3434   72D    23.1      27.85      68.8    102.55   1    1089.   .04589      .00   .00        0.  324  18   A34   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   73C  TC 1171 QC   208.29 QCD   271.45 QD    63.16    3434   73D  TD 1164 QD    97.06 QDC   267.16 QC   170.10   *
*                                3434   73CD TCD 1168 QCD   280.70 QC   197.39 QD    83.31                                  *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   73CD   68.8      97.06     279.4    280.70   0       0.   .00000      .00   .00        0.  324   0   A33   .00
    3434   74C      .0        .00     279.4    280.70   0       0.   .00000      .00   .00        0.  324  99   A33   .00
    3434   75C    41.8      54.85     321.2    303.17   1     822.   .03894      .00   .00        0.  324  15   A33   .01
    3434   76C    40.5      46.39     361.7    331.48   1     823.   .03639      .00   .00        0.  324  17   A32   .01
    3434   77C    46.9      44.93     408.6    362.16   1     987.   .03718      .00   .00        0.  324  22   A32   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   78B  TB 1279 QB    51.68 QBC    98.03 QC    46.35    3434   78C  TC 1170 QC   357.97 QCB   378.53 QB    20.56   *
*                                3434   78BC TBC 1170 QBC   378.53 QB    20.56 QC   357.97                                  *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
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    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   78BC  408.6     357.97     569.9    378.53   0       0.   .00000      .00   .00        0.  324   0   A31   .00
    3434   79B      .0        .00     569.9    378.53   0       0.   .00000      .00   .00        0.  324  99   A31   .00
    3434   80B      .0        .00     569.9    378.53   2    1062.   .00515      .00   .00        0.  324   5   A32   .00
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   81A  TA 1173 QA   402.48 QAB   766.18 QB   363.70    3434   81B  TB 1175 QB   370.53 QBA   762.75 QA   392.22   *
*                                3434   81AB TAB 1174 QAB   768.16 QA   399.64 QB   368.52                                  *
*****************************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   81AB  569.9     370.53     904.1    768.16   0       0.   .00000      .00   .00        0.  324   0   A32   .00
    3434   82A      .0        .00     904.1    768.16   0       0.   .00000      .00   .00        0.  324  99   A32   .00
    3434   83A      .0        .00     904.1    768.16   2     608.   .00419      .00   .00        0.  324   5   A32   .00
    3434   84B    10.9      27.23      10.9     27.23   1     695.   .22258      .00   .00        0.  334   7   A35   .01
    3434   85B    31.5      49.45      42.4     75.52   1    1282.   .18903      .00   .00        0.  324  13   A35   .01
    3434   86B    33.8      36.61      76.2    108.90   1    1379.   .07518      .00   .00        0.  324  21   A34   .01
    3434   87B    18.2      41.10      94.4    109.75   1     446.   .07018      .00   .00        0.  324   7   A34   .01
    3434   88B    10.2      18.50     104.6    113.31   1     622.   .05015      .00   .00        0.  324  10   A34   .01
    3434   89C     8.8      21.98       8.8     21.98   1     447.   .12846      .00   .00        0.  324   6   A34   .01
    3434   90C    11.4      14.92      20.2     35.93   1    1104.   .06474      .00   .00        0.  324  16   A34   .01

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     5
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                          PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                STORM DAY 4
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   91B  TB 1166 QB   112.64 QBC   134.84 QC    22.20    3434   91C  TC 1160 QC    30.03 QCB   138.72 QB   108.68   *
*                                3434   91BC TBC 1161 QBC   139.63 QB   109.63 QC    30.00                                  *
*****************************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   91BC   20.2      30.03     124.8    139.63   0       0.   .00000      .00   .00        0.  324   0   A33   .00
    3434   92B      .0        .00     124.8    139.63   0       0.   .00000      .00   .00        0.  324  99   A33   .00
    3434   93B    12.0      18.22     136.8    154.05   1     636.   .04617      .00   .00        0.  324  12   A33   .01
    3434   94B     8.3      11.93     145.1    159.57   1     698.   .03287      .00   .00        0.  324  13   A33   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   95A  TA 1176 QA   762.30 QAB   881.38 QB   119.08    3434   95B  TB 1165 QB   156.03 QBA   594.10 QA   438.07   *
*                                3434   95AB TAB 1175 QAB   881.84 QA   757.20 QB   124.64                                  *
*****************************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434   95AB  145.1     156.03    1049.2    881.84   0       0.   .00000      .00   .00        0.  324   0   A32   .00
    3434   96A      .0        .00    1049.2    881.84   0       0.   .00000      .00   .00        0.  324  99   A32   .00
    3434   97B    13.5      22.38      13.5     22.38   1    1005.   .11865      .00   .00        0.  324  12   A35   .01
    3434   98B    10.3      18.68      23.8     36.85   1     847.   .17020      .00   .00        0.  324  10   A34   .01
    3434   99C    10.7      16.99      10.7     16.99   1     973.   .16410      .00   .00        0.  324  12   A34   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  100B  TB 1160 QB    35.75 QBC    51.83 QC    16.08    3434  100C  TC 1159 QC    16.20 QCB    51.66 QB    35.46   *
*                                3434  100BC TBC 1160 QBC    51.83 QB    35.75 QC    16.08                                  *
*****************************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  100BC   10.7      16.20      34.5     51.83   0       0.   .00000      .00   .00        0.  324   0   A34   .00
    3434  101B      .0        .00      34.5     51.83   0       0.   .00000      .00   .00        0.  324  99   A34   .00
    3434  102B    18.5      24.21      53.0     74.69   1    1192.   .10191      .00   .00        0.  324  16   A34   .01
    3434  103C     5.9      11.37       5.9     11.37   1     663.   .14786      .00   .00        0.  324   9   A34   .01
    3434  104C     9.4      12.30      15.3     22.78   1    1306.   .14308      .00   .00        0.  324  16   A34   .01
```

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434  105B  TB 1163 QB    72.12 QBC    93.24 QC    21.12    3434  105C  TC 1162 QC    21.20 QCB    93.00 QB    71.80   *
*                                3434  105BC TBC 1163 QBC    93.24 QB    72.12 QC    21.12                                 *
*****************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	105BC	15.3	21.20	68.3	93.24	0	0.	.00000	.00	.00	0.	324	0	A33	.00
3434	106B	.0	.00	68.3	93.24	0	0.	.00000	.00	.00	0.	324	99	A33	.00
3434	107B	8.1	11.64	76.4	100.95	1	727.	.04132	.00	.00	0.	324	13	A33	.01
3434	108C	9.1	14.74	9.1	14.74	1	852.	.18345	.00	.00	0.	324	11	A33	.01

```
 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     6
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                   STORM DAY 4
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	109C	17.1	17.69	26.2	31.54	1	1098.	.04577	.00	.00	0.	324	21	A33	.01

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434  110B  TB 1165 QB    98.17 QBC   127.29 QC    29.12    3434  110C  TC 1165 QC    29.12 QCB   127.29 QB    98.17   *
*                                3434  110BC TBC 1165 QBC   127.29 QB    98.17 QC    29.12                                 *
*****************************************************************************************************************
```

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	110BC	26.2	29.12	102.6	127.29	0	0.	.00000	.00	.00	0.	324	0	A33	.00
3434	111B	.0	.00	102.6	127.29	0	0.	.00000	.00	.00	0.	324	99	A33	.00
3434	112B	28.0	36.76	130.6	146.74	1	775.	.05071	.00	.00	0.	324	14	A32	.01
3434	113B	.0	.00	130.6	144.19	2	415.	.00118	.00	.00	0.	324	5	A32	.00
3434	114C	13.3	19.03	13.3	19.03	1	1112.	.10691	.00	.00	0.	324	14	A34	.01
3434	115C	11.8	12.65	25.1	29.76	1	1067.	.04766	.00	.00	0.	324	20	A33	.01

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434  116B  TB 1171 QB   136.96 QBC   163.09 QC    26.13    3434  116C  TC 1167 QC    28.05 QCB   148.14 QB   120.09   *
*                                3434  116BC TBC 1171 QBC   163.09 QB   136.96 QC    26.13                                 *
*****************************************************************************************************************
```

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	116BC	25.1	28.05	155.7	163.09	0	0.	.00000	.00	.00	0.	324	0	A32	.00
3434	117B	.0	.00	155.7	163.09	0	0.	.00000	.00	.00	0.	324	99	A32	.00
3434	118B	.0	.00	155.7	163.09	2	375.	.01553	.00	.00	0.	324	5	A32	.00

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434  119A  TA 1175 QA   881.84 QAB  1037.24 QB   155.39    3434  119B  TB 1172 QB   162.49 QBA   993.94 QA   831.45   *
*                                3434  119AB TAB 1175 QAB  1037.24 QA   881.84 QB   155.39                                 *
*****************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	119AB	155.7	162.49	1204.9	1037.24	0	0.	.00000	.00	.00	0.	324	0	A32	.00
3434	120A	.0	.00	1204.9	1037.24	0	0.	.00000	.00	.00	0.	324	99	A32	.00
3434	121A	44.5	34.21	1249.4	1062.72	2	1175.	.02650	.00	.00	0.	324	30	A32	.01
3434	122A	42.8	31.31	1292.2	1080.74	2	1241.	.02035	.00	.00	0.	324	30	A31	.01
3434	123A	32.0	22.19	1324.2	1091.82	2	1373.	.02016	.00	.00	0.	324	30	A30	.01
3434	124A	18.9	14.59	1343.1	1092.59	2	1307.	.01659	.00	.00	0.	334	30	A30	.01
3434	125B	28.2	39.11	28.2	39.11	2	466.	.02054	.00	.00	0.	324	12	A31	.01
3434	126B	32.8	22.74	61.0	61.28	2	1355.	.02192	.00	.00	0.	324	30	A30	.01
3434	127B	24.5	16.99	85.5	74.30	2	1234.	.01824	.00	.00	0.	324	30	A30	.01
3434	128B	14.5	10.62	100.0	81.22	2	1328.	.01370	.00	.00	0.	334	30	A29	.01

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 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     7
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M
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Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat
STORM DAY 4

LOCATION	SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV

CONFLUENCE Q'S
3434 129A TA 1183 QA 1085.64 QAB 1145.95 QB 60.31 3434 129B TB 1173 QB 77.88 QBA 854.59 QA 776.71
3434 129AB TAB 1182 QAB 1147.52 QA 1084.83 QB 62.70

LOCATION	SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434 129AB	100.0	77.88	1443.1	1147.52	0	0.	.00000	.00	.00	0.	334	0	A29	.00
3434 130A	.0	.00	1443.1	1147.52	0	0.	.00000	.00	.00	0.	334	99	A29	.00
3434 131A	15.9	11.65	1459.0	1152.15	2	1094.	.01054	.00	.00	0.	334	30	A29	.01
3434 132B	11.4	45.32	11.4	45.32	1	735.	.17363	.00	.00	0.	320	5	A39	.01
3434 133B	12.4	44.15	23.8	82.74	1	834.	.16660	.00	.00	0.	320	6	A39	.01
3434 134C	24.0	95.42	24.0	95.42	1	790.	.26598	.00	.00	0.	320	5	A39	.01

CONFLUENCE Q'S
3434 135B TB 1156 QB 78.75 QBC 153.39 QC 74.64 3434 135C TC 1154 QC 87.35 QCB 151.98 QB 64.63
3434 135BC TBC 1155 QBC 160.45 QB 74.75 QC 85.70

LOCATION	SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434 135BC	24.0	87.35	47.8	160.45	0	0.	.00000	.00	.00	0.	320	0	A39	.00
3434 136B	.0	.00	47.8	160.45	0	0.	.00000	.00	.00	0.	320	99	A39	.00
3434 137B	6.3	24.31	54.1	178.01	1	732.	.14393	.00	.00	0.	320	5	A38	.01
3434 138C	5.4	20.83	5.4	20.83	1	370.	.25467	.00	.00	0.	320	5	A38	.01
3434 139C	20.7	71.50	26.1	90.71	1	960.	.22406	.00	.00	0.	320	6	A38	.01

CONFLUENCE Q'S
3434 140B TB 1156 QB 172.69 QBC 257.54 QC 84.85 3434 140C TC 1155 QC 86.19 QCB 248.96 QB 162.76
3434 140BC TBC 1156 QBC 257.54 QB 172.69 QC 84.85

LOCATION	SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434 140BC	26.1	86.19	80.2	257.54	0	0.	.00000	.00	.00	0.	320	0	A38	.00
3434 141B	.0	.00	80.2	257.54	0	0.	.00000	.00	.00	0.	320	99	A38	.00
3434 142B	9.4	32.47	89.6	280.70	1	786.	.15274	.00	.00	0.	320	6	A38	.01
3434 143C	7.2	27.78	7.2	27.78	1	471.	.34390	.00	.00	0.	320	5	A38	.01
3434 144C	9.9	31.26	17.1	57.15	1	956.	.14850	.00	.00	0.	320	7	A38	.01

CONFLUENCE Q'S
3434 145B TB 1157 QB 275.05 QBC 327.67 QC 52.62 3434 145C TC 1157 QC 52.62 QCB 327.67 QB 275.05
3434 145BC TBC 1157 QBC 327.67 QB 275.05 QC 52.62

LOCATION	SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434 145BC	17.1	52.62	106.7	327.67	0	0.	.00000	.00	.00	0.	320	0	A37	.00
3434 146B	.0	.00	106.7	327.67	0	0.	.00000	.00	.00	0.	320	99	A37	.00

Program Package Serial Number: 2173
04/16/10 FILE: AREA3 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 8
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat
STORM DAY 4

LOCATION	SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434 147C	14.4	40.00	14.4	40.00	1	748.	.15664	.00	.00	0.	334	7	A38	.01
3434 148C	21.7	58.32	36.1	94.46	1	1601.	.20024	.00	.00	0.	320	9	A37	.01

CONFLUENCE Q'S
3434 149B TB 1157 QB 327.67 QBC 413.13 QC 85.45 3434 149C TC 1159 QC 89.63 QCB 372.27 QB 282.64

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*                                3434  149BC TBC 1157 QBC   413.13 QB   327.67 QC    85.45                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  149BC   36.1      89.63     142.8    413.13   0       0.   .00000      .00   .00        0.  320   0   A37   .00
    3434  150B      .0        .00     142.8    413.13   0       0.   .00000      .00   .00        0.  320  99   A37   .00
    3434  151B    31.6      80.71     174.4    488.26   1    1197.   .05390      .00   .00        0.  320  10   A37   .01
    3434  152C     2.8      11.13       2.8     11.13   1     394.   .42203      .00   .00        0.  320   5   A39   .01
    3434  153C     4.8      18.52       7.6     28.01   1     601.   .34336      .00   .00        0.  320   5   A38   .01
    3434  154C     3.1      11.96      10.7     36.15   1     265.   .25332      .00   .00        0.  320   5   A38   .01
    3434  155D     3.2      12.72       3.2     12.72   1     423.   .47522      .00   .00        0.  320   5   A39   .01
    3434  156D     5.6      21.61       8.8     32.52   1     836.   .28165      .00   .00        0.  320   5   A38   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  157C  TC 1155 QC    35.53 QCD    65.71 QD    30.18    3434  157D  TD 1155 QD    30.18 QDC    65.71 QC    35.53   *
*                                3434  157CD TCD 1155 QCD    65.71 QC    35.53 QD    30.18                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  157CD    8.8      30.18      19.5     65.71   0       0.   .00000      .00   .00        0.  320   0   A38   .00
    3434  158C      .0        .00      19.5     65.71   0       0.   .00000      .00   .00        0.  320  99   A38   .00
    3434  159C    17.9      45.72      37.4    110.72   1    1510.   .08547      .00   .00        0.  320  10   A37   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  160B  TB 1160 QB   461.12 QBC   557.90 QC    96.79    3434  160C  TC 1159 QC    97.81 QCB   556.07 QB   458.26   *
*                                3434  160BC TBC 1160 QBC   557.90 QB   461.12 QC    96.79                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  160BC   37.4      97.81     211.8    557.90   0       0.   .00000      .00   .00        0.  320   0   A37   .00
    3434  161B      .0        .00     211.8    557.90   0       0.   .00000      .00   .00        0.  320  99   A37   .00
    3434  162C     8.9      35.38       8.9     35.38   1     314.   .25806      .00   .00        0.  320   5   A39   .01
    3434  163C    13.5      53.67      22.4     85.53   1     562.   .27801      .00   .00        0.  320   5   A39   .01
    3434  164D    12.0      42.73      12.0     42.73   1     979.   .34428      .00   .00        0.  320   6   A39   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  165C  TC 1154 QC    81.31 QCD   118.62 QD    37.32    3434  165D  TD 1155 QD    40.85 QDC   119.50 QC    78.65   *
*                                3434  165CD TCD 1155 QCD   119.50 QC    78.65 QD    40.85                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     9
                                      LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                          STORM DAY 4
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  165CD   12.0      40.85      34.4    119.50   0       0.   .00000      .00   .00        0.  320   0   A38   .00
    3434  166C      .0        .00      34.4    119.50   0       0.   .00000      .00   .00        0.  320  99   A38   .00
    3434  167C    19.3      74.46      53.7    183.64   1     498.   .23254      .00   .00        0.  320   5   A38   .01
    3434  168C    17.2      54.30      70.9    233.03   1     986.   .08379      .00   .00        0.  320   7   A38   .01
    3434  169D    14.3      55.17      14.3     55.17   1     643.   .22906      .00   .00        0.  320   5   A38   .01
    3434  170D    13.9      53.63      28.2     97.89   1     873.   .34344      .00   .00        0.  320   5   A38   .01
    3434  171E    20.1      67.28      20.1     67.28   1     971.   .26201      .00   .00        0.  320   6   A37   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  172D  TD 1155 QD    95.07 QDE   159.52 QE    64.45    3434  172E  TE 1155 QE    64.45 QED   159.52 QD    95.07   *
*                                3434  172DE TDE 1155 QDE   159.52 QD    95.07 QE    64.45                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  172DE   20.1      64.45      48.3    159.52   0       0.   .00000      .00   .00        0.  320   0   A37   .00
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    3434  173D      .0        .00      48.3    159.52   0       0.   .00000      .00   .00        0.  320  99   A37   .00
    3434  174D    16.7      55.90      65.0    207.64   1     777.   .09675      .00   .00        0.  320   6   A37   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  175C  TC 1157 QC   221.79 QCD   419.60 QD   197.81    3434  175D  TD 1156 QD   200.11 QDC   418.35 QC   218.24   *
*                              3434  175CD TCD 1157 QCD   419.60 QC   221.79 QD   197.81                                    *
*****************************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  175CD    65.0     200.11     135.9    419.60   0       0.   .00000      .00   .00        0.  320   0   A37   .00
    3434  176C      .0        .00     135.9    419.60   0       0.   .00000      .00   .00        0.  320  99   A37   .00
    3434  177C    20.9      59.51     156.8    475.03   1     962.   .05124      .00   .00        0.  320   8   A37   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  178B  TB 1160 QB   557.90 QBC   984.05 QC   426.14    3434  178C  TC 1159 QC   451.19 QCB  1007.26 QB   556.07   *
*                              3434  178BC TBC 1159 QBC  1007.26 QB   556.07 QC   451.19                                    *
*****************************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  178BC   156.8     451.19     368.6   1007.26   0       0.   .00000      .00   .00        0.  320   0   A37   .00
    3434  179B      .0        .00     368.6   1007.26   0       0.   .00000      .00   .00        0.  320  99   A37   .00
    3434  180B    44.1      93.47     412.7   1093.01   1    1737.   .04583      .00   .00        0.  320  13   A36   .01
    3434  181C    12.4      41.50      12.4     41.50   1     758.   .14926      .00   .00        0.  320   6   A37   .01
    3434  182C    29.5      76.86      41.9    113.67   1    1406.   .14167      .00   .00        0.  320   9   A36   .01
    3434  183C     4.8      16.84      46.7    111.73   1     581.   .13575      .00   .00        0.  320   5   A35   .01
    3434  184D     6.3      20.36       6.3     20.36   1     534.   .21299      .00   .00        0.  334   5   A36   .01
    3434  185D    10.5      30.09      16.8     47.84   1     869.   .15477      .00   .00        0.  320   7   A35   .01

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE    10
                                   LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                      PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                  STORM DAY 4
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  186C  TC 1159 QC   110.90 QCD   148.27 QD    37.38    3434  186D  TD 1157 QD    45.05 QDC   148.06 QC   103.01   *
*                              3434  186CD TCD 1158 QCD   151.06 QC   108.86 QD    42.20                                    *
*****************************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  186CD    16.8      45.05      63.5    151.06   0       0.   .00000      .00   .00        0.  320   0   A35   .00
    3434  187C      .0        .00      63.5    151.06   0       0.   .00000      .00   .00        0.  320  99   A35   .00
    3434  188C    11.1      34.78      74.6    167.43   1     695.   .12975      .00   .00        0.  320   6   A35   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  189B  TB 1162 QB  1022.52 QBC  1164.10 QC   141.58    3434  189C  TC 1159 QC   164.56 QCB   965.71 QB   801.16   *
*                              3434  189BC TBC 1162 QBC  1164.10 QB  1022.52 QC   141.58                                    *
*****************************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION       AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  189BC    74.6     164.56     487.3   1164.10   0       0.   .00000      .00   .00        0.  320   0   A35   .00
    3434  190B      .0        .00     487.3   1164.10   0       0.   .00000      .00   .00        0.  320  99   A35   .00
    3434  191B    29.5      66.63     516.8   1197.69   1    1284.   .03833      .00   .00        0.  320  11   A35   .01
    3434  192B    24.3      62.79     541.1   1167.51   1     820.   .04418      .00   .00        0.  320   8   A34   .01
    3434  193B    19.7      41.10     560.8   1159.71   1     739.   .06758      .00   .00        0.  334   9   A34   .01
    3434  194B    33.6      48.95     594.4   1165.45   1    1446.   .09519      .00   .00        0.  334  15   A33   .01
    3434  195B    16.6      34.07     611.0   1152.49   1     427.   .03615      .00   .00        0.  334   8   A32   .01
    3434  196B    20.7      26.52     631.7   1151.35   1    1191.   .03815      .00   .00        0.  334  17   A32   .01
    3434  197B    24.1      33.71     655.8   1138.23   1    1124.   .04581      .00   .00        0.  334  15   A32   .01
    3434  198C    11.4      30.66      11.4     30.66   1     758.   .22878      .00   .00        0.  334   7   A37   .01
    3434  199C    32.2      83.89      43.6    111.29   1    1279.   .11163      .00   .00        0.  320   9   A36   .01
    3434  200D    12.2      36.18      12.2     36.18   1     880.   .09513      .00   .00        0.  320   7   A36   .01
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*****************************************************************************************************************************
*                                                    CONFLUENCE Q'S                                                         *
*   3434  201C  TC 1158 QC   105.90 QCD   138.50 QD    32.60    3434  201D  TD 1157 QD    33.20 QDC   135.97 QC   102.77   *
*                                3434  201CD TCD 1158 QCD   138.50 QC   105.90 QD    32.60                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  201CD    12.2      33.20      55.8    138.50   0       0.   .00000      .00   .00        0.  320   0   A36   .00
    3434  202C      .0        .00      55.8    138.50   0       0.   .00000      .00   .00        0.  320  99   A36   .00
    3434  203C    36.4      51.02      92.2    188.80   1    1845.   .07014      .00   .00        0.  334  18   A35   .01
    3434  204D    13.1      30.27      13.1     30.27   1     697.   .12502      .00   .00        0.  334   8   A35   .01
    3434  205D     6.6      14.29      19.7     42.22   1     884.   .13023      .00   .00        0.  334   9   A35   .01

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE    11
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                          STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
*****************************************************************************************************************************
*                                                    CONFLUENCE Q'S                                                         *
*   3434  206C  TC 1163 QC   172.14 QCD   201.16 QD    29.03    3434  206D  TD 1159 QD    40.28 QDC   180.31 QC   140.03   *
*                                3434  206CD TCD 1162 QCD   204.32 QC   171.14 QD    33.19                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  206CD    19.7      40.28     111.9    204.32   0       0.   .00000      .00   .00        0.  334   0   A35   .00
    3434  207C      .0        .00     111.9    204.32   0       0.   .00000      .00   .00        0.  334  99   A35   .00
    3434  208C    39.9      69.52     151.8    252.76   1    1295.   .12816      .00   .00        0.  334  12   A34   .01
    3434  209D    10.3      22.30      10.3     22.30   1     809.   .11707      .00   .00        0.  334   9   A35   .01
    3434  210D     5.2      14.33      15.5     29.59   1     575.   .15612      .00   .00        0.  334   6   A35   .01
    3434  211E     4.5      12.40       4.5     12.40   1     454.   .08222      .00   .00        0.  334   6   A35   .01
    3434  212E     3.0       7.49       7.5     17.90   1     676.   .14919      .00   .00        0.  334   7   A35   .01
*****************************************************************************************************************************
*                                                    CONFLUENCE Q'S                                                         *
*   3434  213D  TD 1157 QD    29.03 QDE    45.07 QE    16.05    3434  213E  TE 1158 QE    16.55 QED    45.31 QD    28.76   *
*                                3434  213DE TDE 1158 QDE    45.31 QD    28.76 QE    16.55                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  213DE     7.5      16.55      23.0     45.31   0       0.   .00000      .00   .00        0.  334   0   A34   .00
    3434  214D      .0        .00      23.0     45.31   0       0.   .00000      .00   .00        0.  334  99   A34   .00
    3434  215D     5.6      13.51      28.6     54.06   1     658.   .17232      .00   .00        0.  334   7   A34   .01
*****************************************************************************************************************************
*                                                    CONFLUENCE Q'S                                                         *
*   3434  216C  TC 1163 QC   247.19 QCD   285.49 QD    38.30    3434  216D  TD 1158 QD    53.05 QDC   236.51 QC   183.46   *
*                                3434  216CD TCD 1162 QCD   287.09 QC   244.86 QD    42.23                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  216CD    28.6      53.05     180.4    287.09   0       0.   .00000      .00   .00        0.  334   0   A34   .00
    3434  217C      .0        .00     180.4    287.09   0       0.   .00000      .00   .00        0.  334  99   A34   .00
    3434  218C    21.6      31.47     202.0    313.17   1    1364.   .08413      .00   .00        0.  334  15   A33   .01
    3434  219D     6.4      13.35       6.4     13.35   1     797.   .11968      .00   .00        0.  334   9   A34   .01
    3434  220D    14.1      23.56      20.5     34.47   1    1230.   .16411      .00   .00        0.  334  12   A33   .01
*****************************************************************************************************************************
*                                                    CONFLUENCE Q'S                                                         *
*   3434  221C  TC 1165 QC   305.64 QCD   331.89 QD    26.25    3434  221D  TD 1161 QD    33.17 QDC   298.66 QC   265.49   *
*                                3434  221CD TCD 1164 QCD   333.10 QC   303.95 QD    29.15                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  221CD    20.5      33.17     222.5    333.10   0       0.   .00000      .00   .00        0.  334   0   A33   .00
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3434	222C	.0	.00	222.5	333.10	0	0.	.00000	.00	.00	0.	334	99	A33	.00
3434	223C	35.3	41.11	257.8	369.47	1	1772.	.06488	.00	.00	0.	334	21	A33	.01

Program Package Serial Number: 2173

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

LOCATION	SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV

CONFLUENCE Q'S

3434 224B TB 1174 QB 1123.87 QBC 1402.06 QC 278.19 3434 224C TC 1168 QC 357.28 QCB 1117.94 QB 760.66
3434 224BC TBC 1173 QBC 1407.40 QB 1110.46 QC 296.95

LOCATION	SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434 224BC	257.8	357.28	913.6	1407.40	0	0.	.00000	.00	.00	0.	334	0	A32	.00
3434 225B	.0	.00	913.6	1407.40	0	0.	.00000	.00	.00	0.	334	99	A32	.00
3434 226B	11.5	19.57	925.1	1410.12	1	516.	.01723	.00	.00	0.	334	11	A32	.01
3434 227B	23.2	37.22	948.3	1405.88	1	852.	.04396	.00	.00	0.	334	12	A32	.01
3434 228C	7.8	12.52	7.8	12.52	1	876.	.05328	.00	.00	0.	334	12	A32	.01
3434 229C	23.6	31.58	31.4	39.93	1	1228.	.05537	.00	.00	0.	334	16	A32	.01
3434 230C	58.0	71.16	89.4	99.47	1	1154.	.05086	.00	.00	0.	334	17	A31	.01
3434 231C	.0	.00	89.4	97.32	2	1615.	.00324	.00	.00	0.	334	5	A31	.00

CONFLUENCE Q'S

3434 232B TB 1176 QB 1396.62 QBC 1476.91 QC 80.29 3434 232C TC 1177 QC 80.95 QCB 1470.50 QB 1389.55
3434 232BC TBC 1176 QBC 1476.91 QB 1396.62 QC 80.29

LOCATION	SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434 232BC	89.4	80.95	1037.7	1476.91	0	0.	.00000	.00	.00	0.	334	0	A32	.00
3434 233B	.0	.00	1037.7	1476.91	0	0.	.00000	.00	.00	0.	334	99	A32	.00
3434 234C	17.4	56.24	17.4	56.24	1	451.	.22146	.00	.00	0.	334	5	A36	.01
3434 235C	37.2	67.47	54.6	119.66	1	1305.	.13026	.00	.00	0.	334	12	A35	.01
3434 236C	11.1	22.27	65.7	129.96	1	728.	.12373	.00	.00	0.	324	9	A35	.01
3434 237D	13.4	36.92	13.4	36.92	1	644.	.25345	.00	.00	0.	334	6	A35	.01
3434 238D	20.9	36.02	34.3	71.70	1	1522.	.16398	.00	.00	0.	334	13	A35	.01

CONFLUENCE Q'S

3434 239C TC 1159 QC 126.02 QCD 191.13 QD 65.11 3434 239D TD 1159 QD 65.11 QDC 191.13 QC 126.02
3434 239CD TCD 1159 QCD 191.13 QC 126.02 QD 65.11

LOCATION	SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434 239CD	34.3	65.11	100.0	191.13	0	0.	.00000	.00	.00	0.	324	0	A35	.00
3434 240C	.0	.00	100.0	191.13	0	0.	.00000	.00	.00	0.	324	99	A35	.00
3434 241C	28.0	44.47	128.0	230.77	1	920.	.08614	.00	.00	0.	324	12	A34	.01
3434 242C	11.1	15.22	139.1	238.62	1	991.	.06669	.00	.00	0.	324	15	A34	.01
3434 243D	6.9	14.94	6.9	14.94	1	976.	.21128	.00	.00	0.	334	9	A35	.01
3434 244D	16.5	21.60	23.4	35.06	1	1268.	.11406	.00	.00	0.	324	16	A34	.01

Program Package Serial Number: 2173

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

LOCATION	SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV

CONFLUENCE Q'S

3434 245C TC 1163 QC 231.62 QCD 264.64 QD 33.02 3434 245D TD 1162 QD 33.19 QDC 260.05 QC 226.86

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*                                3434  245CD TCD 1163 QCD   264.64 QC   231.62 QD    33.02                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  245CD   23.4      33.19     162.5    264.64   0       0.   .00000      .00   .00        0.  324   0   A33   .00
    3434  246C      .0        .00     162.5    264.64   0       0.   .00000      .00   .00        0.  324  99   A33   .00
    3434  247C     2.3      5.53     164.8    265.42   1     278.   .03741      .00   .00        0.  324   6   A33   .01
    3434  248D     6.3     16.71       6.3     16.71   1     511.   .18583      .00   .00        0.  334   6   A34   .01
    3434  249D    12.7     16.67      19.0     32.63   1     937.   .06685      .00   .00        0.  324  15   A33   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  250C  TC 1164 QC   263.32 QCD   286.96 QD    23.64    3434  250D  TD 1160 QD    28.76 QDC   227.66 QC   198.90   *
*                                3434  250CD TCD 1164 QCD   286.96 QC   263.32 QD    23.64                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  250CD   19.0      28.76     183.8    286.96   0       0.   .00000      .00   .00        0.  324   0   A33   .00
    3434  251C      .0        .00     183.8    286.96   0       0.   .00000      .00   .00        0.  324  99   A33   .00
    3434  252C    24.0     27.70     207.8    309.70   1    1074.   .05993      .00   .00        0.  324  18   A33   .01
    3434  253C    23.1     24.48     230.9    320.45   1    1029.   .05778      .00   .00        0.  324  19   A32   .01
    3434  254C      .0        .00     230.9    312.53   2     982.   .00738      .00   .00        0.  324   5   A32   .00
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  255B  TB 1176 QB  1476.91 QBC  1746.88 QC   269.97    3434  255C  TC 1173 QC   298.13 QCB  1643.38 QB  1345.25   *
*                                3434  255BC TBC 1176 QBC  1746.88 QB  1476.91 QC   269.97                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  255BC  230.9     298.13    1268.6   1746.88   0       0.   .00000      .00   .00        0.  334   0   A32   .00
    3434  256B      .0        .00    1268.6   1746.88   0       0.   .00000      .00   .00        0.  334  99   A32   .00
    3434  257B    13.3      12.57    1281.9   1750.47   2     824.   .02933      .00   .00        0.  324  21   A31   .01
    3434  258B    16.8      12.29    1298.7   1752.05   2    1135.   .02646      .00   .00        0.  324  30   A31   .01
    3434  259C    24.1      19.63      24.1     19.63   2     920.   .02640      .00   .00        0.  324  26   A31   .01
    3434  260C    32.3      23.63      56.4     42.57   2    1488.   .02019      .00   .00        0.  324  30   A31   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  261B  TB 1178 QB  1744.64 QBC  1781.25 QC    36.62    3434  261C  TC 1169 QC    41.33 QCB  1158.29 QB  1116.96   *
*                                3434  261BC TBC 1178 QBC  1781.25 QB  1744.64 QC    36.62                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  261BC   56.4      41.33    1355.1   1781.25   0       0.   .00000      .00   .00        0.  324   0   A31   .00
    3434  262B      .0        .00    1355.1   1781.25   0       0.   .00000      .00   .00        0.  324  99   A31   .00

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE    14
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                STORM DAY 4
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  263B    32.4      39.75    1387.5   1788.34   2     941.   .02198      .00   .00        0.  334  17   A31   .01
    3434  264B    28.5      28.74    1416.0   1786.57   2    1030.   .01678      .00   .00        0.  334  21   A30   .01
    3434  265B    22.1      16.19    1438.1   1783.12   2    1135.   .01228      .00   .00        0.  334  30   A29   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  266A  TA 1185 QA  1144.86 QAB  2854.82 QB  1709.96    3434  266B  TB 1183 QB  1770.74 QBA  2904.35 QA  1133.61   *
*                                3434  266AB TAB 1183 QAB  2904.35 QA  1133.61 QB  1770.74                                    *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  266AB 1438.1    1770.74    2897.1   2904.35   0       0.   .00000      .00   .00        0.  334   0   A29   .00
    3434  267A      .0        .00    2897.1   2904.35   0       0.   .00000      .00   .00        0.  334  99   A29   .00
    3434  268A    17.9      19.08    2915.0   2907.60   2     780.   .01503      .00   .00        0.  334  18   A29   .01
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    3434  269A    11.9       9.51    2926.9   2901.91   2     802.   .01032      .00   .00        0.  334  25   A28   .01
    3434  270A     9.7       7.09    2936.6   2891.68   2     825.   .00925      .00   .00        0.  334  28   A28   .01
    3434  271B    10.1      10.37      10.1     10.37   2     859.   .01874      .00   .00        0.  334  19   A29   .01
    3434  272B     9.7       7.09      19.8     16.63   2     903.   .01251      .00   .00        0.  334  28   A28   .01
    3434  273B     6.5       4.48      26.3     19.83   2     906.   .01128      .00   .00        0.  334  30   A28   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  274A  TA 1187 QA  2884.24 QAB  2898.18 QB    13.94    3434  274B  TB 1175 QB    19.17 QBA  1651.64 QA  1632.47   *
*                                3434  274AB TAB 1187 QAB  2898.18 QA  2884.24 QB    13.94                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  274AB    26.3      19.17    2962.9   2898.18   0       0.   .00000      .00   .00        0.  334   0   A28   .00
    3434  275A      .0        .00    2962.9   2898.18   0       0.   .00000      .00   .00        0.  334  99   A28   .00
    3434  276A    17.8      11.57    2980.7   2901.54   2     946.   .00816      .00   .00        0.  334  30   A27   .01
    3434  277B    18.9      32.85      18.9     32.85   2     511.   .02970      .00   .00        0.  334  10   A31   .01
    3434  278B    24.6      27.97      43.5     59.86   2    1102.   .02872      .00   .00        0.  334  19   A31   .01
    3434  279B    17.5      17.65      61.0     74.16   2    1029.   .01909      .00   .00        0.  334  21   A30   .01
    3434  280B    15.9      16.32      76.9     85.15   2     877.   .01892      .00   .00        0.  334  19   A29   .01
    3434  281B    10.2       9.74      87.1     90.70   2     879.   .01649      .00   .00        0.  334  21   A29   .01
    3434  282C    12.9      23.76      12.9     23.76   2     576.   .04679      .00   .00        0.  334   9   A31   .01
    3434  283C    32.9      38.38      45.8     61.51   2     991.   .03481      .00   .00        0.  334  17   A30   .01
    3434  284C    47.3      44.57      93.1    103.77   2    1210.   .02430      .00   .00        0.  334  23   A30   .01
    3434  285C    33.7      24.69     126.8    124.80   2    1332.   .01584      .00   .00        0.  334  30   A29   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  286B  TB 1170 QB    88.55 QBC   206.38 QC   117.83    3434  286C  TC 1168 QC   120.22 QCB   205.25 QB    85.04   *
*                                3434  286BC TBC 1169 QBC   206.96 QB    87.41 QC   119.55                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  286BC   126.8     120.22     213.9    206.96   0       0.   .00000      .00   .00        0.  334   0   A29   .00
    3434  287B      .0        .00     213.9    206.96   0       0.   .00000      .00   .00        0.  334  99   A29   .00

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE    15
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  288B    29.9      20.63     243.8    225.04   2    1107.   .01108      .00   .00        0.  334  30   A28   .01
    3434  289B    13.5       8.77     257.3    227.14   2    1240.   .01137      .00   .00        0.  334  30   A27   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  290A  TA 1189 QA  2886.61 QAB  3033.85 QB   147.23    3434  290B  TB 1177 QB   221.79 QBA  1886.74 QA  1664.95   *
*                                3434  290AB TAB 1188 QAB  3041.45 QA  2885.96 QB   155.49                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  290AB   257.3     221.79    3238.0   3041.45   0       0.   .00000      .00   .00        0.  324   0   A27   .00
    3434  291A      .0        .00    3238.0   3041.45   0       0.   .00000      .00   .00        0.  324  99   A27   .00
    3434  292A    12.5       7.36    3250.5   3043.79   2     574.   .00764      .00   .00        0.  324  30   A27   .01
    3434  293B    13.7      18.29      13.7     18.29   2     509.   .01888      .00   .00        0.  334  12   A28   .01
    3434  294B    17.9      11.63      31.6     29.28   2    1306.   .01031      .00   .00        0.  334  30   A27   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  295A  TA 1189 QA  3036.02 QAB  3046.58 QB    10.56    3434  295B  TB 1168 QB    25.51 QBA  1228.21 QA  1202.70   *
*                                3434  295AB TAB 1189 QAB  3046.58 QA  3036.02 QB    10.56                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  295AB    31.6      25.51    3282.1   3046.58   0       0.   .00000      .00   .00        0.  324   0   A27   .00
    3434  296A      .0        .00    3282.1   3046.58   0       0.   .00000      .00   .00        0.  324  99   A27   .00
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    3434  297A    21.5      12.18    3303.6   3050.34   2     953.   .00922      .00   .00        0.  324  30   A26   .01
    3434  298A    20.9      11.84    3324.5   3043.28   2    1287.   .00669      .00   .00        0.  324  30   A26   .01
    3434  299B    19.9      51.08      19.9     51.08   2     218.   .05244      .00   .00        0.  334   5   A30   .01
    3434  300B    20.8      24.27      40.7     71.63   2     911.   .02399      .00   .00        0.  334  17   A30   .01
    3434  301B    15.2      14.51      55.9     77.68   2     996.   .02184      .00   .00        0.  334  21   A29   .01
    3434  302B    23.8      21.26      79.7     91.69   2    1063.   .02137      .00   .00        0.  334  23   A29   .01
    3434  303B    33.5      23.11     113.2    109.34   2    1128.   .02022      .00   .00        0.  334  30   A28   .01
    3434  304B    29.8      19.36     143.0    122.67   2    1263.   .01375      .00   .00        0.  334  30   A27   .01
    3434  305B    16.4       9.65     159.4    126.05   2    1074.   .01102      .00   .00        0.  324  30   A27   .01
    3434  306B     9.8       5.55     169.2    126.76   2    1388.   .01052      .00   .00        0.  324  30   A26   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  307A  TA 1193 QA  3017.94 QAB  3115.43 QB    97.50    3434  307B  TB 1183 QB   121.83 QBA  2080.25 QA  1958.43   *
*                                3434  307AB TAB 1193 QAB  3115.43 QA  3017.94 QB    97.50                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  307AB   169.2    121.83    3493.7   3115.43   0       0.   .00000      .00   .00        0.  324   0   A26   .00
    3434  308A      .0       .00    3493.7   3115.43   0       0.   .00000      .00   .00        0.  324  99   A26   .00
    3434  309B    14.2      30.74      14.2     30.74   1     997.   .19466      .00   .00        0.  334   9   A35   .01
    3434  310B    19.5      33.98      33.7     61.94   1    1064.   .06843      .00   .00        0.  334  12   A34   .01
    3434  311B    31.7      44.24      65.4     98.96   1    1522.   .08908      .00   .00        0.  334  16   A33   .01
    3434  312B    20.5      41.04      85.9    101.56   1     902.   .17495      .00   .00        0.  334   9   A33   .01

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE    16
                                   LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                        PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  313B    19.2      24.60     105.1    120.10   1    1385.   .06604      .00   .00        0.  334  17   A32   .01
    3434  314C     6.9      16.00       6.9     16.00   1     688.   .20218      .00   .00        0.  334   7   A33   .01
    3434  315C    13.6      19.82      20.5     34.89   1    1422.   .13507      .00   .00        0.  334  14   A32   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  316B  TB 1167 QB   118.16 QBC   139.96 QC    21.80    3434  316C  TC 1161 QC    31.56 QCB   136.06 QB   104.50   *
*                                3434  316BC TBC 1164 QBC   144.03 QB   115.72 QC    28.31                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  316BC   20.5      31.56     125.6    144.03   0       0.   .00000      .00   .00        0.  334   0   A32   .00
    3434  317B      .0       .00     125.6    144.03   0       0.   .00000      .00   .00        0.  334  99   A32   .00
    3434  318B    15.9      18.33     141.5    160.00   1    1259.   .03129      .00   .00        0.  334  20   A32   .01
    3434  319C    14.4      27.72      14.4     27.72   1     790.   .18095      .00   .00        0.  334   9   A32   .01
    3434  320C    27.1      36.26      41.5     62.55   1    1072.   .03479      .00   .00        0.  334  16   A32   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  321B  TB 1170 QB   153.71 QBC   192.20 QC    38.49    3434  321C  TC 1163 QC    56.80 QCB   176.47 QB   119.67   *
*                                3434  321BC TBC 1167 QBC   198.23 QB   149.11 QC    49.12                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  321BC   41.5      56.80     183.0    198.23   0       0.   .00000      .00   .00        0.  334   0   A32   .00
    3434  322B      .0       .00     183.0    198.23   0       0.   .00000      .00   .00        0.  334  99   A32   .00
    3434  323B     8.5      13.05     191.5    200.86   1     605.   .02215      .00   .00        0.  334  12   A31   .01
    3434  324C    11.0      17.65      11.0     17.65   1     936.   .05764      .00   .00        0.  334  12   A32   .01
    3434  325C     9.1      14.78      20.1     27.56   1     726.   .04649      .00   .00        0.  334  11   A31   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  326B  TB 1170 QB   198.68 QBC   216.28 QC    17.60    3434  326C  TC 1163 QC    25.58 QCB   175.64 QB   150.06   *
*                                3434  326BC TBC 1170 QBC   216.28 QB   198.68 QC    17.60                                  *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
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    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  326BC   20.1      25.58     211.6    216.28   0       0.   .00000      .00   .00        0.  334   0   A31   .00
    3434  327B      .0        .00     211.6    216.28   0       0.   .00000      .00   .00        0.  334  99   A31   .00
    3434  328B    14.4      26.52     226.0    219.82   1     457.   .02623      .00   .00        0.  334   9   A31   .01
    3434  329C     8.1      18.03       8.1     18.03   1     469.   .06235      .00   .00        0.  334   7   A32   .01
    3434  330C    25.8      30.43      33.9     47.06   1    1150.   .04234      .00   .00        0.  334  18   A31   .01
    3434  331C      .0        .00      33.9     41.74   2    1048.   .01371      .00   .00        0.  334   5   A31   .00
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434  332B  TB 1171 QB   218.97 QBC   256.56 QC    37.59    3434  332C  TC 1169 QC    38.45 QCB   251.93 QB   213.48   *
 *                                3434  332BC TBC 1171 QBC   256.56 QB   218.97 QC    37.59                                *
 ***********************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE    17
                                       LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                STORM DAY 4
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  332BC   33.9      38.45     259.9    256.56   0       0.   .00000      .00   .00        0.  334   0   A31   .00
    3434  333B      .0        .00     259.9    256.56   0       0.   .00000      .00   .00        0.  334  99   A31   .00
    3434  334C    13.5      26.64      13.5     26.64   1     909.   .09636      .00   .00        0.  334  10   A34   .01
    3434  335C    17.3      27.47      30.8     50.34   1    1345.   .12900      .00   .00        0.  334  13   A33   .01
    3434  336C    29.6      34.47      60.4     80.60   1    2103.   .10196      .00   .00        0.  334  21   A33   .01
    3434  337D     9.0      17.76       9.0     17.76   1     974.   .12440      .00   .00        0.  334  10   A34   .01
    3434  338D    11.7      22.15      20.7     35.54   1     924.   .13738      .00   .00        0.  334  10   A33   .01
    3434  339D    25.5      34.13      46.2     66.60   1    1753.   .12448      .00   .00        0.  334  17   A33   .01
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434  340C  TC 1167 QC    75.70 QCD   134.45 QD    58.76    3434  340D  TD 1164 QD    63.32 QDC   133.37 QC    70.04   *
 *                                3434  340CD TCD 1166 QCD   135.90 QC    74.78 QD    61.12                                *
 ***********************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  340CD   46.2      63.32     106.6    135.90   0       0.   .00000      .00   .00        0.  334   0   A32   .00
    3434  341C      .0        .00     106.6    135.90   0       0.   .00000      .00   .00        0.  334  99   A32   .00
    3434  342C    39.5      43.88     146.1    173.31   1    1378.   .03394      .00   .00        0.  334  21   A32   .01
    3434  343C    38.2      41.98     184.3    190.98   1    1301.   .03706      .00   .00        0.  334  20   A31   .01
    3434  344C      .0        .00     184.3    183.79   2     603.   .00233      .00   .00        0.  334   5   A31   .00
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434  345B  TB 1171 QB   256.56 QBC   398.22 QC   141.66    3434  345C  TC 1178 QC   178.28 QCB   394.06 QB   215.78   *
 *                                3434  345BC TBC 1174 QBC   411.89 QB   247.06 QC   164.83                                 *
 ***********************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  345BC  184.3     178.28     444.2    411.89   0       0.   .00000      .00   .00        0.  334   0   A31   .00
    3434  346B      .0        .00     444.2    411.89   0       0.   .00000      .00   .00        0.  334  99   A31   .00
    3434  347B    26.0      28.16     470.2    418.72   2     993.   .02585      .00   .00        0.  334  19   A30   .01
    3434  348B    13.4      13.51     483.6    420.96   2     974.   .01629      .00   .00        0.  334  21   A30   .01
    3434  349C    15.8      18.43      15.8     18.43   2     895.   .02570      .00   .00        0.  334  17   A30   .01
    3434  350C     9.5       8.95      25.3     26.33   2    1119.   .01846      .00   .00        0.  334  23   A30   .01
 ***********************************************************************************************************************
 *                                                   CONFLUENCE Q'S                                                    *
 *   3434  351B  TB 1178 QB   419.29 QBC   434.78 QC    15.50    3434  351C  TC 1167 QC    25.09 QCB   325.03 QB   299.94   *
 *                                3434  351BC TBC 1178 QBC   434.78 QB   419.29 QC    15.50                                *
 ***********************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  351BC   25.3      25.09     508.9    434.78   0       0.   .00000      .00   .00        0.  334   0   A29   .00
    3434  352B      .0        .00     508.9    434.78   0       0.   .00000      .00   .00        0.  334  99   A29   .00
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3434	353B	17.8	13.04	526.7	443.27	2	1227.	.02182	.00	.00	0.	334	30	A29	.01
3434	354B	17.8	12.28	544.5	448.17	2	1268.	.01899	.00	.00	0.	334	30	A28	.01
3434	355B	14.7	10.14	559.2	450.05	2	1370.	.01517	.00	.00	0.	334	30	A28	.01
3434	356C	12.2	13.70	12.2	13.70	2	997.	.02874	.00	.00	0.	334	18	A30	.01

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
3434	357C	24.4	25.05	36.6	36.77	2	941.	.02776	.00	.00	0.	334	19	A29	.01
3434	358C	36.6	26.81	73.2	62.20	2	1274.	.02528	.00	.00	0.	334	30	A29	.01
3434	359C	20.6	14.21	93.8	74.13	2	1345.	.01491	.00	.00	0.	334	30	A28	.01

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434  360B  TB 1185 QB   446.56 QBC   496.65 QC    50.09    3434  360C  TC 1173 QC    72.16 QCB   380.20 QB   308.04   *
*                                3434  360BC TBC 1184 QBC   497.79 QB   444.97 QC    52.82                                 *
*****************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	360BC	93.8	72.16	653.0	497.79	0	0.	.00000	.00	.00	0.	334	0	A27	.00
3434	361B	.0	.00	653.0	497.79	0	0.	.00000	.00	.00	0.	334	99	A27	.00
3434	362B	23.7	15.40	676.7	502.90	2	1387.	.01266	.00	.00	0.	334	30	A27	.01
3434	363C	16.0	50.71	16.0	50.71	1	706.	.15983	.00	.00	0.	334	6	A39	.01
3434	364C	24.5	62.99	40.5	109.87	1	830.	.10613	.00	.00	0.	334	8	A38	.01
3434	365C	28.0	67.37	68.5	167.92	1	991.	.11641	.00	.00	0.	334	9	A38	.01
3434	366C	18.7	62.59	87.2	189.41	1	793.	.11016	.00	.00	0.	320	6	A37	.01
3434	367D	14.9	40.08	14.9	40.08	1	801.	.23217	.00	.00	0.	334	7	A37	.01
3434	368D	27.8	61.17	42.7	98.32	1	1131.	.13862	.00	.00	0.	334	10	A37	.01

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434  369C  TC 1159 QC   186.95 QCD   280.13 QD    93.18    3434  369D  TD 1158 QD    94.62 QDC   279.88 QC   185.26   *
*                                3434  369CD TCD 1159 QCD   280.13 QC   186.95 QD    93.18                                 *
*****************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	369CD	42.7	94.62	129.9	280.13	0	0.	.00000	.00	.00	0.	334	0	A37	.00
3434	370C	.0	.00	129.9	280.13	0	0.	.00000	.00	.00	0.	334	99	A37	.00
3434	371C	26.5	73.19	156.4	330.86	1	996.	.08100	.00	.00	0.	320	8	A36	.01
3434	372C	23.6	76.47	180.0	345.58	1	587.	.03931	.00	.00	0.	320	6	A36	.01
3434	373D	9.2	29.81	9.2	29.81	1	996.	.23413	.00	.00	0.	320	6	A36	.01

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
*   3434  374C  TC 1160 QC   341.88 QCD   358.66 QD    16.78    3434  374D  TD 1156 QD    27.37 QDC   296.99 QC   269.62   *
*                                3434  374CD TCD 1160 QCD   358.66 QC   341.88 QD    16.78                                 *
*****************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	374CD	9.2	27.37	189.2	358.66	0	0.	.00000	.00	.00	0.	320	0	A36	.00
3434	375C	.0	.00	189.2	358.66	0	0.	.00000	.00	.00	0.	320	99	A36	.00
3434	376C	31.4	75.20	220.6	412.78	1	1257.	.05884	.00	.00	0.	320	10	A35	.01
3434	377C	18.6	35.71	239.2	419.89	1	858.	.05810	.00	.00	0.	334	11	A35	.01
3434	378D	17.5	45.39	17.5	45.39	1	794.	.17368	.00	.00	0.	334	7	A36	.01
3434	379D	25.7	49.35	43.2	91.89	1	1184.	.13713	.00	.00	0.	334	11	A35	.01

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

SUBAREA	SUBAREA	TOTAL	TOTAL	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL	STORM DAY 4 RAIN	PCT

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    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  380C  TC 1163 QC   415.33 QCD   477.76 QD    62.42    3434  380D  TD 1159 QD    87.49 QDC   421.16 QC   333.66   *
*                              3434  380CD TCD 1162 QCD   480.01 QC   408.50 QD    71.51                                   *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  380CD   43.2      87.49     282.4    480.01   0       0.   .00000      .00   .00        0.  334   0   A35   .00
    3434  381C      .0        .00     282.4    480.01   0       0.   .00000      .00   .00        0.  334  99   A35   .00
    3434  382C    33.6      60.94     316.0    515.39   1    1110.   .05774      .00   .00        0.  334  12   A35   .01
    3434  383C    44.7      67.87     360.7    556.53   1    1444.   .07679      .00   .00        0.  334  15   A34   .01
    3434  384D    14.0      27.62      14.0     27.62   1    1123.   .25901      .00   .00        0.  334  10   A34   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  385C  TC 1166 QC   544.37 QCD   553.93 QD     9.56    3434  385D  TD 1158 QD    26.16 QDC   348.02 QC   321.86   *
*                              3434  385CD TCD 1166 QCD   553.93 QC   544.37 QD     9.56                                   *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  385CD   14.0      26.16     374.7    553.93   0       0.   .00000      .00   .00        0.  334   0   A34   .00
    3434  386C      .0        .00     374.7    553.93   0       0.   .00000      .00   .00        0.  334  99   A34   .00
    3434  387C    30.9      43.13     405.6    584.15   1    1502.   .05408      .00   .00        0.  334  17   A34   .01
    3434  388D     7.7      23.13       7.7     23.13   1     477.   .25874      .00   .00        0.  334   5   A34   .01
    3434  389D    18.0      33.25      25.7     54.24   1    1098.   .17341      .00   .00        0.  334  11   A34   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  390C  TC 1168 QC   567.94 QCD   581.08 QD    13.13    3434  390D  TD 1157 QD    50.57 QDC   315.90 QC   265.33   *
*                              3434  390CD TCD 1168 QCD   581.08 QC   567.94 QD    13.13                                   *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  390CD   25.7      50.57     431.3    581.08   0       0.   .00000      .00   .00        0.  334   0   A33   .00
    3434  391C      .0        .00     431.3    581.08   0       0.   .00000      .00   .00        0.  334  99   A33   .00
    3434  392C    15.8      25.09     447.1    586.17   1     933.   .03418      .00   .00        0.  334  13   A33   .01
    3434  393C    15.4      19.00     462.5    583.45   1    1087.   .02409      .00   .00        0.  334  18   A32   .01
    3434  394C    13.9      19.34     476.4    576.11   1     788.   .02597      .00   .00        0.  334  14   A31   .01
    3434  395C    13.4      15.81     489.8    573.84   1    1027.   .02533      .00   .00        0.  334  18   A31   .01
    3434  396D    14.5      29.03      14.5     29.03   1     821.   .17430      .00   .00        0.  334   9   A33   .01
    3434  397D    13.8      23.48      28.3     50.18   1     822.   .05834      .00   .00        0.  334  11   A32   .01
    3434  398D     7.0       7.42      35.3     54.69   1    1261.   .02826      .00   .00        0.  334  21   A31   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  399C  TC 1179 QC   565.06 QCD   589.23 QD    24.17    3434  399D  TD 1168 QD    45.99 QDC   372.07 QC   326.07   *
*                              3434  399CD TCD 1179 QCD   589.23 QC   565.06 QD    24.17                                   *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
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    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                          STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  399CD   35.3      45.99     525.1    589.23   0       0.   .00000      .00   .00        0.  334   0   A31   .00
    3434  400C      .0        .00     525.1    589.23   0       0.   .00000      .00   .00        0.  334  99   A31   .00
    3434  401D     4.1      10.08       4.1     10.08   1     519.   .19214      .00   .00        0.  334   6   A32   .01
    3434  402D    14.7      16.72      18.8     26.08   1    1283.   .04474      .00   .00        0.  334  19   A31   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  403C  TC 1179 QC   589.23 QCD   599.53 QD    10.30    3434  403D  TD 1164 QD    21.13 QDC   307.90 QC   286.77   *
*                              3434  403CD TCD 1179 QCD   599.53 QC   589.23 QD    10.30                                   *
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*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  403CD   18.8      21.13     543.9    599.53   0       0.   .00000      .00   .00        0.  334   0   A31   .00
    3434  404C      .0        .00     543.9    599.53   0       0.   .00000      .00   .00        0.  334  99   A31   .00
    3434  405C    12.4      20.14     556.3    601.95   1     617.   .02937      .00   .00        0.  334  11   A31   .01
    3434  406C     6.2       7.56     562.5    600.42   1     834.   .02318      .00   .00        0.  334  16   A30   .01
    3434  407C     9.5      24.38     572.0    596.66   1     230.   .03829      .00   .00        0.  334   5   A30   .01
    3434  408C    17.7      25.97     589.7    599.08   1     672.   .02723      .00   .00        0.  334  12   A30   .01
    3434  409D     7.4      21.48       7.4     21.48   1     442.   .30093      .00   .00        0.  334   5   A33   .01
    3434  410D     7.3      15.63      14.7     35.34   1     646.   .12404      .00   .00        0.  334   8   A33   .01
    3434  411E     8.4      19.48       8.4     19.48   1     686.   .19352      .00   .00        0.  334   7   A33   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  412D  TD 1156 QD    32.94 QDE    51.61 QE    18.67    3434  412E  TE 1156 QE    18.67 QED    51.61 QD    32.94   *
*                                3434  412DE TDE 1156 QDE    51.61 QD    32.94 QE    18.67                                 *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  412DE    8.4      18.67      23.1     51.61   0       0.   .00000      .00   .00        0.  334   0   A33   .00
    3434  413D      .0        .00      23.1     51.61   0       0.   .00000      .00   .00        0.  334  99   A33   .00
    3434  414D    14.6      27.64      37.7     78.00   1     742.   .07094      .00   .00        0.  334  10   A33   .01
    3434  415D     7.7      14.82      45.4     84.23   1     653.   .05924      .00   .00        0.  334   9   A32   .01
    3434  416E     5.1      13.05       5.1     13.05   1     420.   .09460      .00   .00        0.  334   6   A33   .01
    3434  417E    11.8      17.20      16.9     29.14   1    1064.   .05809      .00   .00        0.  334  14   A32   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  418D  TD 1161 QD    80.85 QDE   105.92 QE    25.07    3434  418E  TE 1161 QE    25.07 QED   105.92 QD    80.85   *
*                                3434  418DE TDE 1161 QDE   105.92 QD    80.85 QE    25.07                                 *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  418DE   16.9      25.07      62.3    105.92   0       0.   .00000      .00   .00        0.  334   0   A32   .00
    3434  419D      .0        .00      62.3    105.92   0       0.   .00000      .00   .00        0.  334  99   A32   .00
    3434  420D    14.9      22.88      77.2    123.82   1     697.   .03696      .00   .00        0.  334  12   A31   .01
    3434  421D     7.1      10.90      84.3    122.42   1     676.   .03076      .00   .00        0.  334  12   A31   .01
    3434  422D     2.4       2.42      86.7    119.11   1    1159.   .02628      .00   .00        0.  334  21   A30   .01

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE    21
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                STORM DAY 4
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  423C  TC 1186 QC   596.63 QCD   647.26 QD    50.64    3434  423D  TD 1172 QD   107.77 QDC   430.13 QC   322.36   *
*                                3434  423CD TCD 1185 QCD   648.74 QC   594.73 QD    54.01                                 *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  423CD   86.7     107.77     676.4    648.74   0       0.   .00000      .00   .00        0.  334   0   A30   .00
    3434  424C      .0        .00     676.4    648.74   0       0.   .00000      .00   .00        0.  334  99   A30   .00
    3434  425D    13.2      37.72      13.2     37.72   1     724.   .26664      .00   .00        0.  334   6   A36   .01
    3434  426D    20.3      40.46      33.5     76.72   1    1265.   .14746      .00   .00        0.  334  11   A36   .01
    3434  427E     7.0      22.62       7.0     22.62   1     589.   .29640      .00   .00        0.  334   5   A36   .01
    3434  428E     7.1      15.08      14.1     35.19   1    1139.   .17017      .00   .00        0.  334  10   A36   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  429D  TD 1158 QD    70.86 QDE   102.55 QE    31.69    3434  429E  TE 1158 QE    31.69 QED   102.55 QD    70.86   *
*                                3434  429DE TDE 1158 QDE   102.55 QD    70.86 QE    31.69                                 *
*****************************************************************************************************************************
                 SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
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    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  429DE   14.1      31.69      47.6    102.55   0       0.   .00000      .00   .00        0.  334   0   A35   .00
    3434  430D      .0        .00      47.6    102.55   0       0.   .00000      .00   .00        0.  334  99   A35   .00
    3434  431E    15.0      29.89      15.0     29.89   1    1399.   .18787      .00   .00        0.  334  11   A36   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  432D  TD 1158 QD   102.55 QDE   129.88 QE    27.34    3434  432E  TE 1159 QE    27.85 QED   128.39 QD   100.54   *
*                              3434  432DE TDE 1158 QDE   129.88 QD   102.55 QE    27.34                                   *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  432DE   15.0      27.85      62.6    129.88   0       0.   .00000      .00   .00        0.  334   0   A35   .00
    3434  433D      .0        .00      62.6    129.88   0       0.   .00000      .00   .00        0.  334  99   A35   .00
    3434  434E     7.6      17.56       7.6     17.56   1     762.   .15728      .00   .00        0.  334   8   A35   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  435D  TD 1158 QD   129.88 QDE   146.26 QE    16.37    3434  435E  TE 1157 QE    16.58 QED   141.96 QD   125.38   *
*                              3434  435DE TDE 1158 QDE   146.26 QD   129.88 QE    16.37                                   *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  435DE    7.6      16.58      70.2    146.26   0       0.   .00000      .00   .00        0.  334   0   A35   .00
    3434  436D      .0        .00      70.2    146.26   0       0.   .00000      .00   .00        0.  334  99   A35   .00
    3434  437D    17.1      31.01      87.3    174.91   1    1179.   .11395      .00   .00        0.  334  12   A35   .01
    3434  438E     9.3      21.49       9.3     21.49   1     910.   .25870      .00   .00        0.  334   8   A35   .01
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    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  439D  TD 1161 QD   168.09 QDE   181.52 QE    13.43    3434  439E  TE 1157 QE    20.60 QED   148.41 QD   127.81   *
*                              3434  439DE TDE 1160 QDE   183.43 QD   167.51 QE    15.92                                   *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  439DE    9.3      20.60      96.6    183.43   0       0.   .00000      .00   .00        0.  334   0   A34   .00
    3434  440D      .0        .00      96.6    183.43   0       0.   .00000      .00   .00        0.  334  99   A34   .00
    3434  441D    19.0      37.49     115.6    206.38   1     931.   .12445      .00   .00        0.  334  10   A34   .01
    3434  442E     7.4      23.07       7.4     23.07   1     380.   .23158      .00   .00        0.  334   5   A35   .01
    3434  443E    25.8      52.84      33.2     74.13   1    1057.   .15041      .00   .00        0.  334  10   A35   .01
    3434  444E    27.2      43.03      60.4    111.56   1    1518.   .11247      .00   .00        0.  334  14   A34   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  445D  TD 1161 QD   203.45 QDE   308.27 QE   104.82    3434  445E  TE 1161 QE   104.82 QED   308.27 QD   203.45   *
*                              3434  445DE TDE 1161 QDE   308.27 QD   203.45 QE   104.82                                   *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  445DE   60.4     104.82     176.0    308.27   0       0.   .00000      .00   .00        0.  334   0   A33   .00
    3434  446D      .0        .00     176.0    308.27   0       0.   .00000      .00   .00        0.  334  99   A33   .00
    3434  447D    38.3      51.26     214.3    355.26   1    1436.   .05735      .00   .00        0.  334  17   A33   .01
    3434  448E    10.9      19.34      10.9     19.34   1    1086.   .19712      .00   .00        0.  334  11   A33   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  449D  TD 1164 QD   338.87 QDE   352.19 QE    13.32    3434  449E  TE 1159 QE    18.25 QED   245.35 QD   227.10   *
*                              3434  449DE TDE 1164 QDE   352.19 QD   338.87 QE    13.32                                   *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
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    3434  449DE   10.9      18.25     225.2    352.19   0       0.   .00000      .00   .00        0.  334   0   A33   .00
    3434  450D      .0        .00     225.2    352.19   0       0.   .00000      .00   .00        0.  334  99   A33   .00
    3434  451D    18.0      28.59     243.2    364.62   1     949.   .03937      .00   .00        0.  334  13   A33   .01
    3434  452D    10.9      15.89     254.1    359.07   1     999.   .04261      .00   .00        0.  334  14   A32   .01
    3434  453D    18.7      27.26     272.8    357.08   1     935.   .05235      .00   .00        0.  334  13   A31   .01
    3434  454D    20.7      33.62     293.5    357.04   1     682.   .03769      .00   .00        0.  334  11   A31   .01
    3434  455D    19.5      22.75     313.0    358.68   1     943.   .02963      .00   .00        0.  334  17   A30   .01
 ************************************************************************************************************************
 *                                                  CONFLUENCE Q'S                                                       *
 *   3434  456C  TC 1185 QC   648.74 QCD   904.78 QD   256.03    3434  456D  TD 1177 QD   351.09 QDC   876.61 QC   525.52   *
 *                              3434  456CD TCD 1182 QCD   925.61 QC   623.48 QD   302.13                                 *
 ************************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  456CD   313.0     351.09     989.4    925.61   0       0.   .00000      .00   .00        0.  334   0   A30   .00

 Program Package Serial Number:  2173
04/16/10   FILE: AREA3    INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE    23
                                     LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                     PROG F0601M

    Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50  SOIL DATA FILE: C:\civild\lasoilx.dat
                                                                                                                STORM DAY 4
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  457C      .0        .00     989.4    925.61   0       0.   .00000      .00   .00        0.  334  99   A30   .00
    3434  458C    12.7      12.12    1002.1    928.10   2     841.   .01261      .00   .00        0.  334  21   A29   .01
    3434  459C     9.4      10.43    1011.5    927.71   2     832.   .02404      .00   .00        0.  334  17   A29   .01
    3434  460D     5.6       8.72       5.6      8.72   2     526.   .02162      .00   .00        0.  334  11   A30   .01
    3434  461D     8.6       7.45      14.2     15.63   2    1042.   .01822      .00   .00        0.  334  24   A29   .01
 ************************************************************************************************************************
 *                                                  CONFLUENCE Q'S                                                       *
 *   3434  462C  TC 1185 QC   926.52 QCD   930.99 QD     4.47    3434  462D  TD 1165 QD    14.39 QDC   480.71 QC   466.32   *
 *                              3434  462CD TCD 1185 QCD   930.99 QC   926.52 QD     4.47                                 *
 ************************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  462CD   14.2      14.39    1025.7    930.99   0       0.   .00000      .00   .00        0.  334   0   A29   .00
    3434  463C      .0        .00    1025.7    930.99   0       0.   .00000      .00   .00        0.  334  99   A29   .00
    3434  464C    10.5      12.16    1036.2    932.77   2     781.   .02284      .00   .00        0.  334  16   A29   .01
    3434  465C     9.8       6.76    1046.0    933.52   2    1159.   .01739      .00   .00        0.  334  30   A28   .01
    3434  466D    12.3      25.18      12.3     25.18   2     325.   .02436      .00   .00        0.  334   7   A30   .01
    3434  467D    22.5      21.48      34.8     45.94   2     963.   .02111      .00   .00        0.  334  21   A29   .01
    3434  468D    22.2      21.19      57.0     62.80   2     944.   .02024      .00   .00        0.  334  21   A29   .01
    3434  469D     9.8       6.76      66.8     66.65   2    1009.   .01614      .00   .00        0.  334  30   A28   .01
 ************************************************************************************************************************
 *                                                  CONFLUENCE Q'S                                                       *
 *   3434  470C  TC 1188 QC   931.28 QCD   953.46 QD    22.18    3434  470D  TD 1168 QD    63.58 QDC   545.09 QC   481.51   *
 *                              3434  470CD TCD 1188 QCD   953.46 QC   931.28 QD    22.18                                 *
 ************************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  470CD   66.8      63.58    1112.8    953.46   0       0.   .00000      .00   .00        0.  334   0   A28   .00
    3434  471C      .0        .00    1112.8    953.46   0       0.   .00000      .00   .00        0.  334  99   A28   .00
    3434  472C    23.0      15.87    1135.8    957.83   2    1203.   .01786      .00   .00        0.  334  30   A28   .01
    3434  473C    17.8      11.57    1153.6    958.71   2    1063.   .01754      .00   .00        0.  334  30   A27   .01
    3434  474C    12.3       7.99    1165.9    958.58   2    1110.   .01314      .00   .00        0.  334  30   A27   .01
 ************************************************************************************************************************
 *                                                  CONFLUENCE Q'S                                                       *
 *   3434  475B  TB 1187 QB   499.05 QBC  1353.93 QC   854.88    3434  475C  TC 1194 QC   956.09 QCB  1416.51 QB   460.42   *
 *                              3434  475BC TBC 1192 QBC  1428.45 QB   478.99 QC   949.46                                 *
 ************************************************************************************************************************
                   SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
    LOCATION      AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
    3434  475BC 1165.9     956.09    1842.6   1428.45   0       0.   .00000      .00   .00        0.  334   0   A27   .00
    3434  476B      .0        .00    1842.6   1428.45   0       0.   .00000      .00   .00        0.  334  99   A27   .00
```

3434	477B	43.0	24.35	1885.6	1435.40	2	1339.	.01081	.00	.00	0.	324	30	A26	.01
3434	478B	24.2	13.71	1909.8	1432.89	2	1359.	.01162	.00	.00	0.	324	30	A26	.01

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

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                                                                                                                                                STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
LOCATION          AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  479A  TA 1193 QA  3115.43 QAB  4493.29 QB  1377.86    3434  479B  TB 1197 QB  1428.23 QBA  4389.27 QA  2961.04   *
*                              3434  479AB TAB 1194 QAB  4508.05 QA  3108.34 QB  1399.71                                     *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
LOCATION          AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
3434  479AB 1909.8    1428.23    5403.5   4508.05   0       0.   .00000      .00   .00        0.  324   0   A26   .00
3434  480A     .0        .00    5403.5   4508.05   0       0.   .00000      .00   .00        0.  324  99   A26   .00
3434  481A    43.7      23.79    5447.2   4514.51   2    1025.   .00931      .00   .00        0.  324  30   A25   .01
3434  482A    31.5      17.15    5478.7   4504.99   2    1379.   .00760      .00   .00        0.  324  30   A25   .01
3434  483A    11.2       5.87    5489.9   4488.94   2    1218.   .00668      .00   .00        0.  334  30   A24   .01
3434  484B     8.9       9.39       8.9      9.39   2     706.   .01905      .00   .00        0.  334  17   A28   .01
3434  485B    18.0      11.70      26.9     20.46   2    1294.   .01639      .00   .00        0.  334  30   A27   .01
3434  486B    27.4      17.80      54.3     35.22   2    1188.   .01414      .00   .00        0.  334  30   A27   .01
3434  487B    32.7      18.52      87.0     50.55   2    1162.   .01080      .00   .00        0.  324  30   A26   .01
3434  488B    40.8      22.21     127.8     67.49   2    1180.   .01273      .00   .00        0.  324  30   A25   .01
3434  489B    26.7      14.54     154.5     77.40   2    1022.   .01145      .00   .00        0.  324  30   A25   .01
3434  490B    12.2       6.39     166.7     80.46   2    1125.   .00824      .00   .00        0.  334  30   A24   .01
3434  491B     7.0       3.67     173.7     80.79   2    1258.   .00628      .00   .00        0.  334  30   A24   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  492A  TA 1200 QA  4473.85 QAB  4549.29 QB    75.43    3434  492B  TB 1193 QB    79.51 QBA  3859.38 QA  3779.87   *
*                              3434  492AB TAB 1200 QAB  4549.29 QA  4473.85 QB    75.43                                     *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
LOCATION          AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
3434  492AB  173.7      79.51    5663.6   4549.29   0       0.   .00000      .00   .00        0.  334   0   A23   .00
3434  493A     .0        .00    5663.6   4549.29   0       0.   .00000      .00   .00        0.  334  99   A23   .00
3434  494B     7.7       4.35       7.7      4.35   2     746.   .01012      .00   .00        0.  334  30   A25   .01
3434  495B    13.2       6.92      20.9     10.62   2    1091.   .00881      .00   .00        0.  334  30   A24   .01
3434  496B    16.9       8.86      37.8     17.71   2    1125.   .00719      .00   .00        0.  334  30   A24   .01
*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434  497A  TA 1200 QA  4549.29 QAB  4560.50 QB    11.22    3434  497B  TB 1181 QB    17.19 QBA  2229.87 QA  2212.69   *
*                              3434  497AB TAB 1200 QAB  4560.50 QA  4549.29 QB    11.22                                     *
*****************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
LOCATION          AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
3434  497AB   37.8      17.19    5701.4   4560.50   0       0.   .00000      .00   .00        0.  334   0   A23   .00
3434  498A     .0        .00    5701.4   4560.50   0       0.   .00000      .00   .00        0.  334  99   A23   .00
3434  499A     4.3       2.11    5705.7   4561.02   2     897.   .00387      .00   .00        0.  334  30   A23   .01
3434  500B    11.9       6.24      11.9      6.24   2     918.   .00913      .00   .00        0.  334  30   A24   .01
3434  501B    16.9       8.86      28.8     14.01   2     938.   .00804      .00   .00        0.  334  30   A24   .01
3434  502B     1.9       1.16      30.7     14.29   2     344.   .00622      .00   .00        0.  334  23   A23   .01
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Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

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                                                                                                                                                STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL   TOTAL  CONV   CONV     CONV     CONV   CONV   CONTROL SOIL      RAIN  PCT
LOCATION          AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
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*****************************************************************************************************************************
*                                                                CONFLUENCE Q'S                                             *
*   3434  503A  TA 1202 QA  4546.67 QAB  4554.34 QB     7.67    3434  503B  TB 1176 QB    14.21 QBA  1748.62 QA  1734.41   *
*                                 3434  503AB TAB 1202 QAB  4554.34 QA  4546.67 QB     7.67                                 *
*****************************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	503AB	30.7	14.21	5736.4	4554.34	0	0.	.00000	.00	.00	0.	334	0	A23	.00
3434	504A	.0	.00	5736.4	4554.34	0	0.	.00000	.00	.00	0.	334	99	A23	.00
3434	505A	6.5	3.18	5742.9	4555.10	2	1046.	.00395	.00	.00	0.	334	30	A23	.01
3434	506B	14.0	7.34	14.0	7.34	2	878.	.00787	.00	.00	0.	334	30	A24	.01
3434	507B	10.7	5.24	24.7	11.80	2	1013.	.00544	.00	.00	0.	334	30	A23	.01

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*****************************************************************************************************************************
*                                                                CONFLUENCE Q'S                                             *
*   3434  508A  TA 1204 QA  4535.50 QAB  4541.69 QB     6.18    3434  508B  TB 1180 QB    11.22 QBA  1810.42 QA  1799.20   *
*                                 3434  508AB TAB 1204 QAB  4541.69 QA  4535.50 QB     6.18                                 *
*****************************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	508AB	24.7	11.22	5767.6	4541.69	0	0.	.00000	.00	.00	0.	334	0	A23	.00
3434	509A	.0	.00	5767.6	4541.69	0	0.	.00000	.00	.00	0.	334	99	A23	.00
3434	510A	23.7	11.13	5791.3	4544.25	2	947.	.00661	.00	.00	0.	334	30	A22	.01
3434	511A	15.8	7.42	5807.1	4534.01	2	688.	.00955	.00	.00	0.	334	30	A22	.01
3434	512A	18.2	8.55	5825.3	4529.52	2	1134.	.00730	.00	.00	0.	334	30	A22	.01
3434	513A	11.5	5.15	5836.8	4517.08	2	1217.	.00440	.00	.00	0.	334	30	A21	.01
3434	514B	10.1	5.71	10.1	5.71	2	1517.	.01180	.00	.00	0.	334	30	A25	.01
3434	515B	14.9	7.81	25.0	11.88	2	1221.	.00830	.00	.00	0.	334	30	A24	.01
3434	516B	16.7	8.75	41.7	18.28	2	1182.	.00720	.00	.00	0.	334	30	A24	.01
3434	517B	9.6	4.70	51.3	20.98	2	1043.	.00569	.00	.00	0.	334	30	A23	.01
3434	518B	18.2	8.92	69.5	25.56	2	631.	.00569	.00	.00	0.	334	30	A23	.01
3434	519B	28.8	13.52	98.3	34.97	2	665.	.00454	.00	.00	0.	334	30	A22	.01
3434	520B	20.4	9.58	118.7	42.18	2	640.	.00436	.00	.00	0.	334	30	A22	.01
3434	521B	22.8	10.71	141.5	50.15	2	983.	.00817	.00	.00	0.	334	30	A22	.01
3434	522B	15.9	7.12	157.4	54.59	2	881.	.00668	.00	.00	0.	334	30	A21	.01
3434	523B	11.9	5.33	169.3	56.35	2	1311.	.00408	.00	.00	0.	334	30	A21	.01

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*****************************************************************************************************************************
*                                                                CONFLUENCE Q'S                                             *
*   3434  524A  TA 1211 QA  4494.40 QAB  4541.37 QB    46.97    3434  524B  TB 1193 QB    54.69 QBA  2160.28 QA  2105.59   *
*                                 3434  524AB TAB 1211 QAB  4541.37 QA  4494.40 QB    46.97                                 *
*****************************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	524AB	169.3	54.69	6006.1	4541.37	0	0.	.00000	.00	.00	0.	334	0	A21	.00
3434	525A	.0	.00	6006.1	4541.37	0	0.	.00000	.00	.00	0.	334	99	A21	.00
3434	526A	6.8	3.04	6012.9	4542.01	2	1360.	.00719	.00	.00	0.	334	30	A21	.01
3434	527A	.0	.00	6012.9	4522.56	0	0.	.00000	.00	.00	0.	334	99	A21	.00

Program Package Serial Number: 2173
04/16/10 FILE: AREA4 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	1A	40.4	29.56	40.4	29.56	2	978.	.02722	.00	.00	0.	324	30	A31	.01
3434	2A	46.5	32.24	86.9	61.02	2	1146.	.02486	.00	.00	0.	324	30	A30	.01
3434	3A	43.9	30.44	130.8	89.44	2	1308.	.01832	.00	.00	0.	324	30	A30	.01
3434	4A	35.9	26.30	166.7	111.54	2	1211.	.01524	.00	.00	0.	334	30	A29	.01
3434	5A	39.0	26.91	205.7	132.00	2	1265.	.01223	.00	.00	0.	334	30	A28	.01
3434	6A	37.7	26.01	243.4	148.78	2	1415.	.00984	.00	.00	0.	334	30	A28	.01
3434	7A	27.6	17.93	271.0	157.18	2	1208.	.01172	.00	.00	0.	334	30	A27	.01
3434	8A	26.8	16.28	297.8	162.31	2	1214.	.01151	.00	.00	0.	334	30	A26	.01
3434	9A	26.4	14.93	324.2	165.71	2	1060.	.01002	.00	.00	0.	334	30	A25	.01
3434	10A	26.8	14.05	351.0	169.13	2	1094.	.01221	.00	.00	0.	334	30	A24	.01
3434	11A	23.6	12.37	374.6	171.94	2	803.	.00980	.00	.00	0.	334	30	A24	.01
3434	12A	32.1	15.73	406.7	175.67	2	1128.	.00849	.00	.00	0.	334	30	A23	.01
3434	13B	11.1	11.39	11.1	11.39	2	785.	.01433	.00	.00	0.	334	19	A29	.01
3434	14B	16.5	16.94	27.6	26.32	2	858.	.01707	.00	.00	0.	334	19	A29	.01
3434	15B	32.6	23.88	60.2	48.44	2	1355.	.01217	.00	.00	0.	334	30	A29	.01
3434	16B	42.8	29.53	103.0	71.75	2	1356.	.01136	.00	.00	0.	334	30	A28	.01
3434	17B	44.3	28.78	147.3	91.30	2	1259.	.00906	.00	.00	0.	334	30	A27	.01
3434	18B	44.8	27.21	192.1	108.36	2	1163.	.01173	.00	.00	0.	334	30	A26	.01
3434	19B	48.5	29.46	240.6	125.88	2	1302.	.00931	.00	.00	0.	334	30	A26	.01
3434	20B	31.3	17.70	271.9	133.21	2	1118.	.01118	.00	.00	0.	334	30	A25	.01
3434	21B	14.8	7.76	286.7	135.50	2	1152.	.00719	.00	.00	0.	334	30	A24	.01
3434	22B	13.6	6.66	300.3	136.57	2	1203.	.00685	.00	.00	0.	334	30	A23	.01

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CONFLUENCE Q'S

3434 23A TA 1201 QA 174.93 QAB 306.63 QB 131.71 3434 23B TB 1194 QB 135.56 QBA 305.84 QA 170.28

3434 23AB TAB 1198 QAB 308.47 QA 174.08 QB 134.39

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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	23AB	300.3	135.56	707.0	308.47	0	0.	.00000	.00	.00	0.	334	0	A23	.00
3434	24A	.0	.00	707.0	308.47	0	0.	.00000	.00	.00	0.	334	99	A23	.00
3434	25A	33.3	9.25	740.3	317.42	2	1295.	.00710	.00	.00	0.	334	99	A23	.01
3434	26A	26.2	6.96	766.5	322.88	2	856.	.01020	.00	.00	0.	334	99	A22	.01
3434	27A	35.3	9.37	801.8	331.33	2	969.	.00770	.00	.00	0.	334	99	A22	.01
3434	28A	31.5	7.99	833.3	338.19	2	921.	.00500	.00	.00	0.	334	99	A21	.01
3434	29A	25.6	6.49	858.9	343.35	2	1200.	.00810	.00	.00	0.	334	99	A21	.01
3434	30A	.0	.00	858.9	342.54	0	0.	.00000	.00	.00	0.	334	99	A21	.00

Program Package Serial Number: 2173
04/16/10 FILE: AREA5 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM RAIN ZONE	DAY 4 PCT IMPV
3434	1A	28.3	19.62	28.3	19.62	2	1026.	.02625	.00	.00	0.	324	30	A30	.01
3434	2A	33.0	22.88	61.3	41.72	2	1349.	.02157	.00	.00	0.	324	30	A30	.01
3434	3A	26.6	17.50	87.9	56.90	2	1123.	.01722	.00	.00	0.	324	30	A29	.01
3434	4A	30.9	22.63	118.8	75.42	2	1227.	.01653	.00	.00	0.	334	30	A29	.01
3434	5A	30.3	20.90	149.1	90.63	2	1212.	.01549	.00	.00	0.	334	30	A28	.01
3434	6A	31.3	20.34	180.4	104.28	2	1174.	.01167	.00	.00	0.	334	30	A27	.01
3434	7A	32.9	19.98	213.3	116.58	2	1270.	.01090	.00	.00	0.	334	30	A26	.01
3434	8A	30.9	18.77	244.2	125.22	2	1151.	.01200	.00	.00	0.	334	30	A26	.01
3434	9A	26.8	15.15	271.0	130.78	2	1078.	.00961	.00	.00	0.	334	30	A25	.01
3434	10A	26.0	13.63	297.0	134.53	2	1159.	.01115	.00	.00	0.	334	30	A24	.01
3434	11A	14.3	7.49	311.3	136.31	2	979.	.00999	.00	.00	0.	334	30	A24	.01
3434	12A	5.1	2.50	316.4	136.66	2	931.	.01063	.00	.00	0.	334	30	A23	.01
3434	13B	10.0	16.10	10.0	16.10	2	385.	.02052	.00	.00	0.	324	9	A30	.01
3434	14B	16.4	13.57	26.4	29.04	2	1006.	.01874	.00	.00	0.	324	22	A29	.01
3434	15B	25.7	17.73	52.1	44.27	2	1167.	.01925	.00	.00	0.	334	30	A28	.01
3434	16B	25.5	17.59	77.6	58.43	2	1180.	.01460	.00	.00	0.	334	30	A28	.01
3434	17B	23.4	15.20	101.0	68.86	2	1214.	.01195	.00	.00	0.	334	30	A27	.01
3434	18B	24.5	14.88	125.5	77.69	2	1166.	.01161	.00	.00	0.	334	30	A26	.01
3434	19B	21.8	12.33	147.3	83.16	2	1151.	.01287	.00	.00	0.	334	30	A25	.01
3434	20B	18.6	10.52	165.9	85.73	2	1025.	.00996	.00	.00	0.	334	30	A25	.01
3434	21B	23.2	12.16	189.1	88.80	2	1144.	.01096	.00	.00	0.	334	30	A24	.01
3434	22B	18.4	9.01	207.5	90.83	2	854.	.01170	.00	.00	0.	334	30	A23	.01
3434	23B	22.2	10.88	229.7	93.48	2	806.	.01314	.00	.00	0.	334	30	A23	.01

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* CONFLUENCE Q'S *
* 3434 24A TA 1197 QA 136.36 QAB 229.56 QB 93.20 3434 24B TB 1198 QB 93.29 QBA 229.54 QA 136.25 *
* 3434 24AB TAB 1197 QAB 229.56 QA 136.36 QB 93.20 *
****

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	24AB	229.7	93.29	546.1	229.56	0	0.	.00000	.00	.00	0.	334	0	A23	.00
3434	25A	.0	.00	546.1	229.56	0	0.	.00000	.00	.00	0.	334	99	A23	.00
3434	26A	13.8	11.96	559.9	231.63	2	823.	.00807	.00	.00	0.	334	24	A29	.01
3434	27A	16.0	15.01	575.9	233.39	2	749.	.01284	.00	.00	0.	334	20	A28	.01
3434	28A	10.1	10.22	586.0	234.51	2	611.	.00869	.00	.00	0.	334	18	A28	.01
3434	29A	15.1	9.81	601.1	236.31	2	1614.	.00513	.00	.00	0.	334	30	A27	.01
3434	30B	10.0	6.07	10.0	6.07	2	2097.	.01240	.00	.00	0.	334	30	A26	.01
3434	31B	21.2	11.99	31.2	15.01	2	1538.	.01192	.00	.00	0.	334	30	A25	.01
3434	32B	22.6	12.78	53.8	24.87	2	1248.	.01173	.00	.00	0.	334	30	A25	.01
3434	33B	26.3	13.78	80.1	35.73	2	1402.	.01292	.00	.00	0.	334	30	A24	.01
3434	34B	17.9	8.77	98.0	41.67	2	926.	.01151	.00	.00	0.	334	30	A23	.01
3434	35B	12.9	6.32	110.9	45.57	2	724.	.00682	.00	.00	0.	334	30	A23	.01
3434	36B	15.3	7.50	126.2	49.34	2	1164.	.00641	.00	.00	0.	334	30	A23	.01

Program Package Serial Number: 2173
04/16/10 FILE: AREA5 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 2
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

LOCATION	SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM RAIN ZONE	DAY 4 PCT IMPV

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* CONFLUENCE Q'S *
* 3434 37A TA 1213 QA 234.56 QAB 269.66 QB 35.10 3434 37B TB 1187 QB 48.16 QBA 238.10 QA 189.94 *
* 3434 37AB TAB 1209 QAB 270.92 QA 233.11 QB 37.82 *
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	37AB	126.2	48.16	727.3	270.92	0	0.	.00000	.00	.00	0.	334	0	A23	.00
3434	38A	.0	.00	727.3	270.92	0	0.	.00000	.00	.00	0.	334	99	A23	.00
3434	39A	21.5	10.53	748.8	273.21	2	1448.	.00705	.00	.00	0.	334	30	A23	.01
3434	40A	17.4	8.52	766.2	274.14	2	1056.	.00382	.00	.00	0.	334	30	A23	.01
3434	41A	.0	.00	766.2	273.36	0	0.	.00000	.00	.00	0.	334	99	A23	.00

Program Package Serial Number: 2173
04/16/10 FILE: AREA6 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
3434	1A	19.3	13.38	19.3	13.38	2	1438.	.02376	.00	.00	0.	324	30	A30	.01
3434	2A	21.2	13.95	40.5	25.89	2	1256.	.02089	.00	.00	0.	324	30	A29	.01
3434	3A	23.8	15.66	64.3	39.18	2	1129.	.01946	.00	.00	0.	324	30	A29	.01
3434	4A	29.1	20.08	93.4	55.47	2	1119.	.01652	.00	.00	0.	334	30	A28	.01
3434	5A	35.3	22.94	128.7	73.42	2	1174.	.01445	.00	.00	0.	334	30	A27	.01
3434	6A	48.4	29.39	177.1	95.72	2	1421.	.01251	.00	.00	0.	334	30	A26	.01
3434	7A	44.3	25.05	221.4	113.77	2	1501.	.01165	.00	.00	0.	334	30	A25	.01
3434	8A	27.5	14.41	248.9	121.97	2	1517.	.01319	.00	.00	0.	334	30	A24	.01
3434	9A	14.5	7.60	263.4	123.20	2	1086.	.01219	.00	.00	0.	334	30	A24	.01
3434	10A	14.6	7.15	278.0	124.89	2	1740.	.01180	.00	.00	0.	334	30	A23	.01
3434	11B	20.6	12.51	20.6	12.51	2	3146.	.01267	.00	.00	0.	334	30	A26	.01
3434	12B	18.0	10.18	38.6	17.12	2	1107.	.01365	.00	.00	0.	334	30	A25	.01
3434	13B	31.2	16.35	69.8	30.14	2	1180.	.01653	.00	.00	0.	334	30	A24	.01
3434	14B	32.8	17.19	102.6	45.08	2	1091.	.01167	.00	.00	0.	334	30	A24	.01
3434	15B	31.0	15.19	133.6	57.71	2	1031.	.01331	.00	.00	0.	334	30	A23	.01
3434	16B	20.5	10.04	154.1	65.37	2	614.	.01079	.00	.00	0.	334	30	A23	.01

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**********************************************************************************************************************
*                                                CONFLUENCE Q'S                                                      *
*   3434   17A  TA 1194 QA   123.44 QAB   172.14 QB    48.70    3434   17B  TB 1178 QB    65.17 QBA   164.28 QA    99.11   *
*                                 3434   17AB TAB 1187 QAB   176.35 QA   118.31 QB    58.04                            *
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	17AB	154.1	65.17	432.1	176.35	0	0.	.00000	.00	.00	0.	334	0	A23	.00
3434	18A	.0	.00	432.1	176.35	0	0.	.00000	.00	.00	0.	334	99	A23	.00
3434	19A	46.5	21.83	478.6	183.60	2	1339.	.01015	.00	.00	0.	334	30	A22	.01
3434	20A	49.6	22.20	528.2	189.66	2	932.	.00836	.00	.00	0.	334	30	A21	.01
3434	21A	39.1	17.50	567.3	194.34	2	701.	.01171	.00	.00	0.	334	30	A21	.01
3434	22A	22.7	10.16	590.0	197.05	2	684.	.00593	.00	.00	0.	334	30	A21	.01
3434	23A	20.1	9.00	610.1	199.28	2	1174.	.00358	.00	.00	0.	334	30	A21	.01
3434	24A	.0	.00	610.1	198.99	0	0.	.00000	.00	.00	0.	334	99	A21	.00

Program Package Serial Number: 2173
04/16/10 FILE: AREA7 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
3434	1A	8.6	16.40	8.6	16.40	1	1121.	.18951	.00	.00	0.	324	11	A37	.01
3434	2A	38.1	42.17	46.7	57.05	1	1807.	.08048	.00	.00	0.	324	23	A36	.01
3434	3A	34.6	32.06	81.3	83.70	1	1660.	.05056	.00	.00	0.	324	28	A35	.01
3434	4A	9.6	8.67	90.9	87.46	2	1542.	.03738	.00	.00	0.	324	29	A35	.01
3434	5A	21.7	20.29	112.6	99.16	2	1348.	.03985	.00	.00	0.	324	26	A34	.01
3434	6A	24.2	25.03	136.8	104.88	2	1056.	.03752	.00	.00	0.	324	21	A33	.01
3434	7A	25.3	27.83	162.1	110.34	2	858.	.03256	.00	.00	0.	324	18	A32	.01
3434	8A	34.4	37.63	196.5	137.67	2	804.	.04053	.00	.00	0.	324	17	A31	.01
3434	9A	40.6	39.18	237.1	171.91	2	762.	.03231	.00	.00	0.	324	19	A30	.01
3434	10A	45.7	47.37	282.8	211.00	2	639.	.02808	.00	.00	0.	324	17	A30	.01
3434	11A	32.1	22.26	314.9	232.26	2	1693.	.02336	.00	.00	0.	324	30	A30	.01
3434	12A	28.7	18.88	343.6	246.50	2	1190.	.01821	.00	.00	0.	324	30	A29	.01
3434	13A	29.1	18.04	372.7	260.59	2	1045.	.02011	.00	.00	0.	324	30	A28	.01
3434	14A	30.8	21.25	403.5	275.58	2	1181.	.01704	.00	.00	0.	334	30	A28	.01
3434	15A	26.5	17.22	430.0	285.57	2	995.	.01519	.00	.00	0.	334	30	A27	.01
3434	16A	32.0	19.43	462.0	297.14	2	1093.	.01173	.00	.00	0.	334	30	A26	.01
3434	17A	33.9	20.59	495.9	304.19	2	1035.	.01109	.00	.00	0.	334	30	A26	.01
3434	18A	37.2	21.03	533.1	309.06	2	1085.	.01538	.00	.00	0.	334	30	A25	.01
3434	19A	39.1	20.49	572.2	314.21	2	1124.	.01669	.00	.00	0.	334	30	A24	.01
3434	20A	40.4	19.79	612.6	318.83	2	1074.	.01436	.00	.00	0.	334	30	A23	.01
3434	21A	39.9	19.55	652.5	322.89	2	1058.	.01254	.00	.00	0.	334	30	A23	.01
3434	22A	34.0	15.96	686.5	325.64	2	1083.	.01133	.00	.00	0.	334	30	A22	.01
3434	23B	10.3	6.39	10.3	6.39	2	2335.	.01830	.00	.00	0.	324	30	A28	.01
3434	24B	25.3	16.44	35.6	20.01	2	2078.	.01459	.00	.00	0.	334	30	A27	.01
3434	25B	13.9	7.86	49.5	24.96	2	881.	.01244	.00	.00	0.	334	30	A25	.01
3434	26B	21.6	12.21	71.1	33.70	2	1052.	.01465	.00	.00	0.	334	30	A25	.01
3434	27B	29.7	15.57	100.8	45.17	2	1149.	.01488	.00	.00	0.	334	30	A24	.01
3434	28B	31.5	15.43	132.3	56.99	2	1228.	.01191	.00	.00	0.	334	30	A23	.01
3434	29B	24.6	12.05	156.9	65.50	2	1058.	.01372	.00	.00	0.	334	30	A23	.01
3434	30B	24.9	11.69	181.8	73.34	2	1146.	.01126	.00	.00	0.	334	30	A22	.01

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*****************************************************************************************************************************
*                                                   CONFLUENCE Q'S                                                          *
*   3434   31A  TA 1198 QA   324.05 QAB   384.08 QB    60.03    3434   31B  TB 1182 QB    72.48 QBA   343.53 QA   271.05   *
*                              3434   31AB TAB 1197 QAB   384.51 QA   323.41 QB    61.10                                  *
*****************************************************************************************************************************
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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3434	31AB	181.8	72.48	868.3	384.51	0	0.	.00000	.00	.00	0.	334	0	A22	.00
3434	32A	.0	.00	868.3	384.51	0	0.	.00000	.00	.00	0.	334	99	A22	.00
3434	33A	37.8	16.92	906.1	388.88	2	852.	.00912	.00	.00	0.	334	30	A21	.01
3434	34A	36.1	16.16	942.2	391.75	2	744.	.01224	.00	.00	0.	334	30	A21	.01
3434	35A	29.6	13.25	971.8	394.40	2	711.	.00837	.00	.00	0.	334	30	A21	.01
3434	36A	20.1	9.00	991.9	395.83	2	501.	.00502	.00	.00	0.	334	30	A21	.01
3434	37A	.0	.00	991.9	395.30	0	0.	.00000	.00	.00	0.	334	99	A21	.00

ATTACHMENT 5

Existing Conditions
Unit Hydrographs
(Non-Burn Conditions)

Program Package Serial Number: 2173
04/16/10 FILE: AREA1 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 2
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE:

HYDROGRAPH AT 3434 11A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	.00	100	3.53	200	3.59	300	3.73	400	3.93
500	4.17	600	4.46	700	4.85	800	5.37	900	6.06
1000	7.12	1050	8.09	1100	9.83	1110	10.26	1120	10.78
1130	11.45	1131	11.53	1132	11.60	1133	11.69	1134	11.77
1135	11.85	1136	11.94	1137	12.03	1138	12.12	1139	12.22
1140	12.32	1141	12.42	1142	12.53	1143	12.64	1144	12.75
1145	12.87	1146	13.00	1147	13.13	1148	13.26	1149	13.40
1150	13.55	1151	13.71	1152	13.88	1153	14.06	1154	14.27
1155	14.51	1156	14.77	1157	15.05	1158	15.35	1159	15.64
1160	15.93	1161	16.23	1162	16.53	1163	16.85	1164	17.18
1165	17.51	1166	17.85	1167	18.20	1168	18.55	1169	18.91
1170	19.27	1171	19.64	1172	20.02	1173	20.40	1174	20.78
1175	21.16	1176	21.55	1177	21.93	1178	22.31	1179	22.67
1180	23.03	1181	23.38	1182	23.70	1183	24.00	1184	24.25
1185	24.47	1186	24.64	1187	24.78	1188	24.91	1189	25.01
1190	25.10	1191	25.16	1192	25.19	1193	25.20	1194	25.18
1195	25.14	1196	25.07	1197	24.99	1198	24.89	1199	24.76
1200	24.62	1201	24.45	1202	24.27	1203	24.08	1204	23.87
1205	23.65	1206	23.42	1207	23.17	1208	22.92	1209	22.66
1210	22.40	1211	22.14	1212	21.87	1213	21.60	1214	21.33
1215	21.06	1216	20.79	1217	20.53	1218	20.27	1219	20.01
1220	19.76	1221	19.51	1222	19.26	1223	19.03	1224	18.79
1225	18.56	1226	18.34	1227	18.12	1228	17.91	1229	17.70
1230	17.50	1231	17.30	1232	17.11	1233	16.92	1234	16.74
1235	16.56	1236	16.38	1237	16.21	1238	16.04	1239	15.88
1240	15.72	1241	15.56	1242	15.41	1243	15.26	1244	15.12
1245	14.98	1246	14.84	1247	14.70	1248	14.57	1249	14.43
1250	14.31	1251	14.18	1252	14.06	1253	13.93	1254	13.81
1255	13.70	1256	13.58	1257	13.47	1258	13.35	1259	13.24
1260	13.13	1261	13.03	1262	12.92	1263	12.81	1264	12.71
1265	12.61	1266	12.51	1267	12.40	1268	12.30	1269	12.21
1270	12.11	1271	12.01	1272	11.91	1273	11.82	1274	11.72
1275	11.63	1276	11.53	1277	11.44	1278	11.35	1279	11.25
1280	11.16	1281	11.07	1282	10.98	1283	10.89	1284	10.80
1285	10.72	1286	10.63	1287	10.54	1288	10.46	1289	10.38
1290	10.29	1291	10.21	1292	10.13	1293	10.05	1294	9.97
1295	9.89	1296	9.81	1297	9.73	1298	9.65	1299	9.58
1300	9.50	1310	8.76	1320	8.11	1330	7.55	1340	7.05
1350	6.62	1360	6.24	1370	5.91	1380	5.63	1390	5.37
1400	5.15	1420	4.78	1440	4.49	1460	4.13	1500	3.53

TOTAL VOLUME THIS HYDROGRAPH = 12.94(Ac.Ft)

Program Package Serial Number: 2173
04/16/10 FILE: AREA1A INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 2
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE:

HYDROGRAPH AT 3434 2A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	.00	100	.14	200	.14	300	.15	400	.16
500	.17	600	.18	700	.19	800	.21	900	.24
1000	.29	1050	.34	1100	.42	1110	.44	1120	.47
1130	.51	1131	.51	1132	.51	1133	.52	1134	.53
1135	.53	1136	.54	1137	.54	1138	.55	1139	.56
1140	.56	1141	.57	1142	.58	1143	.59	1144	.59
1145	.60	1146	.61	1147	.62	1148	.63	1149	.64
1150	.65	1151	.66	1152	.67	1153	.68	1154	.69
1155	.70	1156	.71	1157	.73	1158	.74	1159	.76
1160	.78	1161	.81	1162	.84	1163	.88	1164	.93
1165	.97	1166	1.01	1167	1.05	1168	1.08	1169	1.12
1170	1.15	1171	1.18	1172	1.21	1173	1.23	1174	1.26
1175	1.28	1176	1.29	1177	1.31	1178	1.32	1179	1.33
1180	1.34	1181	1.35	1182	1.35	1183	1.35	1184	1.35
1185	1.35	1186	1.34	1187	1.34	1188	1.33	1189	1.31
1190	1.30	1191	1.28	1192	1.25	1193	1.22	1194	1.19
1195	1.15	1196	1.11	1197	1.07	1198	1.03	1199	1.00
1200	.96	1201	.93	1202	.90	1203	.87	1204	.84
1205	.81	1206	.79	1207	.76	1208	.74	1209	.72
1210	.70	1211	.68	1212	.66	1213	.64	1214	.62
1215	.61	1216	.59	1217	.58	1218	.56	1219	.55
1220	.54	1221	.53	1222	.51	1223	.50	1224	.49
1225	.48	1226	.47	1227	.46	1228	.46	1229	.45
1230	.44	1231	.43	1232	.42	1233	.42	1234	.41
1235	.40	1236	.40	1237	.39	1238	.39	1239	.38
1240	.37	1241	.37	1242	.36	1243	.36	1244	.35
1245	.35	1246	.34	1247	.34	1248	.34	1249	.33
1250	.33	1251	.32	1252	.32	1253	.32	1254	.31
1255	.31	1256	.31	1257	.30	1258	.30	1259	.30
1260	.30	1261	.29	1262	.29	1263	.29	1264	.29
1265	.28	1266	.28	1267	.28	1268	.28	1269	.27
1270	.27	1271	.27	1272	.27	1273	.27	1274	.26
1275	.26	1276	.26	1277	.26	1278	.26	1279	.25
1280	.25	1281	.25	1282	.25	1283	.25	1284	.25
1285	.24	1286	.24	1287	.24	1288	.24	1289	.24
1290	.24	1291	.24	1292	.23	1293	.23	1294	.23
1295	.23	1296	.23	1297	.23	1298	.23	1299	.23
1300	.22	1310	.21	1320	.21	1330	.20	1340	.19
1350	.18	1360	.18	1370	.17	1380	.17	1390	.16
1400	.16	1420	.15	1440	.15	1460	.14	1500	.14

TOTAL VOLUME THIS HYDROGRAPH = .49(Ac.Ft)

Program Package Serial Number: 2173
04/16/10 FILE: AREA1B INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 2
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE:

HYDROGRAPH AT 3434 4A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	.00	100	.28	200	.29	300	.36	400	.44
500	.45	600	.49	700	.53	800	.58	900	.66
1000	.79	1050	.92	1100	1.16	1110	1.22	1120	1.29
1130	1.40	1131	1.41	1132	1.43	1133	1.44	1134	1.45
1135	1.47	1136	1.48	1137	1.50	1138	1.51	1139	1.53
1140	1.55	1141	1.57	1142	1.59	1143	1.61	1144	1.63
1145	1.65	1146	1.67	1147	1.70	1148	1.72	1149	1.75
1150	1.78	1151	1.81	1152	1.84	1153	1.88	1154	1.93
1155	1.98	1156	2.05	1157	2.12	1158	2.19	1159	2.27
1160	2.34	1161	2.40	1162	2.46	1163	2.52	1164	2.58
1165	2.64	1166	2.70	1167	2.77	1168	2.83	1169	2.89
1170	2.95	1171	3.00	1172	3.06	1173	3.11	1174	3.15
1175	3.20	1176	3.23	1177	3.27	1178	3.30	1179	3.32
1180	3.35	1181	3.36	1182	3.37	1183	3.37	1184	3.36
1185	3.34	1186	3.30	1187	3.26	1188	3.21	1189	3.16
1190	3.12	1191	3.08	1192	3.04	1193	3.00	1194	2.95
1195	2.90	1196	2.85	1197	2.80	1198	2.74	1199	2.69
1200	2.63	1201	2.57	1202	2.52	1203	2.46	1204	2.41
1205	2.36	1206	2.30	1207	2.25	1208	2.20	1209	2.16
1210	2.11	1211	2.06	1212	2.02	1213	1.97	1214	1.93
1215	1.89	1216	1.84	1217	1.80	1218	1.77	1219	1.73
1220	1.69	1221	1.65	1222	1.62	1223	1.58	1224	1.55
1225	1.52	1226	1.49	1227	1.46	1228	1.43	1229	1.40
1230	1.37	1231	1.35	1232	1.32	1233	1.30	1234	1.27
1235	1.25	1236	1.23	1237	1.21	1238	1.19	1239	1.17
1240	1.15	1241	1.13	1242	1.11	1243	1.09	1244	1.08
1245	1.06	1246	1.05	1247	1.03	1248	1.02	1249	1.00
1250	.99	1251	.97	1252	.96	1253	.95	1254	.94
1255	.93	1256	.91	1257	.90	1258	.89	1259	.88
1260	.87	1261	.86	1262	.85	1263	.85	1264	.84
1265	.83	1266	.82	1267	.81	1268	.80	1269	.80
1270	.79	1271	.78	1272	.78	1273	.77	1274	.76
1275	.76	1276	.75	1277	.74	1278	.74	1279	.73
1280	.73	1281	.72	1282	.72	1283	.71	1284	.71
1285	.70	1286	.70	1287	.69	1288	.69	1289	.68
1290	.68	1291	.67	1292	.67	1293	.66	1294	.66
1295	.66	1296	.65	1297	.65	1298	.64	1299	.64
1300	.64	1310	.61	1320	.58	1330	.55	1340	.53
1350	.52	1360	.50	1370	.49	1380	.47	1390	.46
1400	.45	1420	.43	1440	.41	1460	.36	1500	.28

TOTAL VOLUME THIS HYDROGRAPH = 1.33(Ac.Ft)

Program Package Serial Number: 2173
04/19/10 FILE: AREA2 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 11
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE:

HYDROGRAPH AT 3434 230A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	.00	100	34.42	200	34.57	300	35.20	400	36.48
500	38.42	600	40.89	700	43.80	800	47.51	900	52.53
1000	59.90	1050	65.10	1100	72.83	1110	74.73	1120	76.79
1130	79.16	1131	79.41	1132	79.66	1133	79.91	1134	80.17
1135	80.43	1136	80.70	1137	80.97	1138	81.24	1139	81.52
1140	81.81	1141	82.09	1142	82.39	1143	82.68	1144	82.99
1145	83.29	1146	83.61	1147	83.93	1148	84.25	1149	84.59
1150	84.93	1151	85.28	1152	85.65	1153	86.04	1154	86.44
1155	86.86	1156	87.30	1157	87.73	1158	88.17	1159	88.60
1160	89.04	1161	89.48	1162	89.93	1163	90.38	1164	90.84
1165	91.30	1166	91.77	1167	92.25	1168	92.74	1169	93.25
1170	93.77	1171	94.30	1172	94.84	1173	95.39	1174	95.96
1175	96.53	1176	97.11	1177	97.70	1178	98.29	1179	98.89
1180	99.49	1181	100.09	1182	100.68	1183	101.26	1184	101.83
1185	102.40	1186	102.97	1187	103.56	1188	104.16	1189	104.78
1190	105.41	1191	106.06	1192	106.73	1193	107.41	1194	108.11
1195	108.82	1196	109.55	1197	110.28	1198	111.03	1199	111.79
1200	112.56	1201	113.34	1202	114.14	1203	114.94	1204	115.76
1205	116.59	1206	117.44	1207	118.31	1208	119.19	1209	120.08
1210	121.00	1211	121.93	1212	122.88	1213	123.84	1214	124.81
1215	125.80	1216	126.80	1217	127.81	1218	128.84	1219	129.88
1220	130.93	1221	132.01	1222	133.10	1223	134.21	1224	135.36
1225	136.54	1226	137.76	1227	139.02	1228	140.33	1229	141.70
1230	143.13	1231	144.64	1232	146.23	1233	147.91	1234	149.69
1235	151.60	1236	153.63	1237	155.82	1238	158.18	1239	160.73
1240	163.51	1241	166.53	1242	169.83	1243	173.44	1244	177.39
1245	181.70	1246	186.45	1247	191.71	1248	197.67	1249	204.62
1250	213.06	1251	223.69	1252	237.37	1253	254.94	1254	276.82
1255	302.74	1256	331.74	1257	362.37	1258	392.93	1259	421.83
1260	447.82	1261	470.08	1262	488.21	1263	502.20	1264	512.31
1265	518.94	1266	522.55	1267	523.63	1268	522.61	1269	519.90
1270	515.84	1271	510.72	1272	504.77	1273	498.22	1274	491.19
1275	483.85	1276	476.26	1277	468.53	1278	460.76	1279	452.90
1280	445.06	1281	437.33	1282	429.62	1283	421.95	1284	414.45
1285	407.08	1286	399.80	1287	392.61	1288	385.62	1289	378.78
1290	372.05	1291	365.44	1292	358.95	1293	352.69	1294	346.55
1295	340.51	1296	334.61	1297	328.83	1298	323.22	1299	317.78
1300	312.41	1310	266.10	1320	229.76	1330	199.71	1340	175.06
1350	154.50	1360	137.36	1370	123.01	1380	110.99	1390	100.89
1400	92.38	1420	79.31	1440	69.89	1460	62.57	1500	52.15

TOTAL VOLUME THIS HYDROGRAPH = 146.30(Ac.Ft)

Program Package Serial Number: 2173
04/16/10 FILE: AREA3 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 26
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE:

HYDROGRAPH AT 3434 527A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	.00	100	92.34	200	92.72	300	94.43	400	97.99
500	103.03	600	109.33	700	117.27	800	127.36	900	140.99
1000	161.26	1050	175.69	1100	197.92	1110	203.48	1120	209.49
1130	216.36	1131	217.09	1132	217.83	1133	218.56	1134	219.30
1135	220.06	1136	220.83	1137	221.61	1138	222.41	1139	223.21
1140	224.02	1141	224.85	1142	225.69	1143	226.54	1144	227.40
1145	228.28	1146	229.17	1147	230.07	1148	230.99	1149	231.93
1150	232.89	1151	233.86	1152	234.85	1153	235.88	1154	236.93
1155	238.00	1156	239.10	1157	240.23	1158	241.38	1159	242.56
1160	243.77	1161	245.01	1162	246.29	1163	247.61	1164	248.96
1165	250.35	1166	251.77	1167	253.23	1168	254.72	1169	256.23
1170	257.76	1171	259.31	1172	260.88	1173	262.47	1174	264.07
1175	265.69	1176	267.33	1177	268.99	1178	270.68	1179	272.39
1180	274.14	1181	275.93	1182	277.76	1183	279.62	1184	281.54
1185	283.51	1186	285.53	1187	287.63	1188	289.79	1189	292.02
1190	294.32	1191	296.68	1192	299.11	1193	301.61	1194	304.18
1195	306.82	1196	309.54	1197	312.35	1198	315.26	1199	318.29
1200	321.45	1201	324.76	1202	328.26	1203	331.97	1204	335.93
1205	340.19	1206	344.80	1207	349.84	1208	355.37	1209	361.52
1210	368.43	1211	376.29	1212	385.33	1213	395.87	1214	408.31
1215	423.18	1216	441.27	1217	463.82	1218	492.97	1219	532.40
1220	587.71	1221	666.24	1222	773.53	1223	908.57	1224	1062.84
1225	1223.18	1226	1375.80	1227	1510.31	1228	1621.15	1229	1707.10
1230	1769.89	1231	1812.59	1232	1838.74	1233	1851.64	1234	1854.12
1235	1848.42	1236	1836.36	1237	1819.28	1238	1798.36	1239	1774.30
1240	1747.98	1241	1719.67	1242	1690.10	1243	1659.49	1244	1627.95
1245	1596.19	1246	1564.23	1247	1531.91	1248	1499.49	1249	1467.92
1250	1436.48	1251	1405.16	1252	1374.08	1253	1343.59	1254	1314.33
1255	1285.38	1256	1256.83	1257	1228.72	1258	1201.09	1259	1174.44
1260	1148.88	1261	1123.78	1262	1099.16	1263	1075.02	1264	1051.36
1265	1028.19	1266	1005.99	1267	984.73	1268	963.89	1269	943.50
1270	923.54	1271	903.99	1272	884.87	1273	866.19	1274	848.47
1275	831.43	1276	814.74	1277	798.39	1278	782.36	1279	766.66
1280	751.29	1281	736.27	1282	722.04	1283	708.47	1284	695.07
1285	681.88	1286	668.91	1287	656.21	1288	643.84	1289	631.96
1290	620.61	1291	609.39	1292	598.36	1293	587.56	1294	577.04
1295	566.85	1296	557.05	1297	547.40	1298	537.95	1299	528.71
1300	519.74	1310	443.35	1320	384.44	1330	337.01	1340	299.16
1350	268.61	1360	243.96	1370	223.99	1380	207.77	1390	194.53
1400	183.58	1420	167.34	1440	155.58	1460	145.64	1500	129.30

TOTAL VOLUME THIS HYDROGRAPH = 399.90(Ac.Ft)

Program Package Serial Number: 2173
04/16/10 FILE: AREA4 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 2
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE:

HYDROGRAPH AT 3434 30A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	.00	100	10.98	200	11.08	300	11.40	400	11.93
500	12.59	600	13.41	700	14.42	800	15.74	900	17.56
1000	20.34	1050	22.37	1100	25.79	1110	26.68	1120	27.65
1130	28.77	1131	28.89	1132	29.01	1133	29.13	1134	29.26
1135	29.38	1136	29.51	1137	29.64	1138	29.77	1139	29.90
1140	30.04	1141	30.18	1142	30.32	1143	30.47	1144	30.61
1145	30.76	1146	30.92	1147	31.07	1148	31.24	1149	31.40
1150	31.57	1151	31.74	1152	31.92	1153	32.11	1154	32.31
1155	32.52	1156	32.74	1157	32.96	1158	33.20	1159	33.44
1160	33.68	1161	33.93	1162	34.19	1163	34.45	1164	34.72
1165	34.99	1166	35.27	1167	35.56	1168	35.85	1169	36.15
1170	36.45	1171	36.76	1172	37.07	1173	37.38	1174	37.70
1175	38.03	1176	38.36	1177	38.69	1178	39.03	1179	39.38
1180	39.73	1181	40.10	1182	40.47	1183	40.85	1184	41.25
1185	41.66	1186	42.09	1187	42.53	1188	42.99	1189	43.47
1190	43.97	1191	44.49	1192	45.03	1193	45.58	1194	46.16
1195	46.76	1196	47.38	1197	48.02	1198	48.68	1199	49.36
1200	50.06	1201	50.79	1202	51.53	1203	52.30	1204	53.09
1205	53.90	1206	54.74	1207	55.59	1208	56.47	1209	57.36
1210	58.27	1211	59.19	1212	60.12	1213	61.06	1214	62.00
1215	62.94	1216	63.88	1217	64.82	1218	65.75	1219	66.67
1220	67.59	1221	68.49	1222	69.39	1223	70.27	1224	71.13
1225	71.98	1226	72.82	1227	73.64	1228	74.44	1229	75.23
1230	76.00	1231	76.75	1232	77.48	1233	78.18	1234	78.86
1235	79.52	1236	80.14	1237	80.74	1238	81.30	1239	81.82
1240	82.30	1241	82.74	1242	83.14	1243	83.48	1244	83.78
1245	84.02	1246	84.20	1247	84.33	1248	84.40	1249	84.41
1250	84.36	1251	84.24	1252	84.06	1253	83.82	1254	83.51
1255	83.14	1256	82.71	1257	82.23	1258	81.70	1259	81.13
1260	80.51	1261	79.85	1262	79.15	1263	78.42	1264	77.66
1265	76.86	1266	76.05	1267	75.21	1268	74.35	1269	73.48
1270	72.59	1271	71.70	1272	70.79	1273	69.88	1274	68.97
1275	68.05	1276	67.14	1277	66.22	1278	65.31	1279	64.40
1280	63.49	1281	62.60	1282	61.71	1283	60.82	1284	59.95
1285	59.09	1286	58.23	1287	57.39	1288	56.55	1289	55.73
1290	54.92	1291	54.12	1292	53.34	1293	52.56	1294	51.80
1295	51.05	1296	50.31	1297	49.58	1298	48.87	1299	48.16
1300	47.47	1310	41.33	1320	36.32	1330	32.21	1340	28.86
1350	26.12	1360	23.88	1370	22.04	1380	20.56	1390	19.35
1400	18.32	1420	16.73	1440	15.54	1460	14.53	1500	12.56

TOTAL VOLUME THIS HYDROGRAPH = 41.06(Ac.Ft)

Program Package Serial Number: 2173
04/16/10 FILE: AREA5 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 3
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE:

HYDROGRAPH AT 3434 41A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	.00	100	9.78	200	9.86	300	10.12	400	10.57
500	11.14	600	11.85	700	12.75	800	13.89	900	15.46
1000	17.84	1050	19.68	1100	22.73	1110	23.50	1120	24.35
1130	25.36	1131	25.47	1132	25.58	1133	25.70	1134	25.81
1135	25.93	1136	26.05	1137	26.17	1138	26.30	1139	26.42
1140	26.55	1141	26.69	1142	26.82	1143	26.96	1144	27.11
1145	27.25	1146	27.41	1147	27.56	1148	27.72	1149	27.89
1150	28.06	1151	28.23	1152	28.42	1153	28.61	1154	28.80
1155	29.02	1156	29.25	1157	29.50	1158	29.77	1159	30.05
1160	30.33	1161	30.61	1162	30.89	1163	31.18	1164	31.47
1165	31.77	1166	32.07	1167	32.38	1168	32.69	1169	33.00
1170	33.32	1171	33.64	1172	33.97	1173	34.31	1174	34.67
1175	35.06	1176	35.48	1177	35.94	1178	36.44	1179	37.00
1180	37.61	1181	38.28	1182	39.00	1183	39.76	1184	40.57
1185	41.39	1186	42.23	1187	43.08	1188	43.91	1189	44.74
1190	45.55	1191	46.33	1192	47.07	1193	47.76	1194	48.39
1195	48.97	1196	49.48	1197	49.95	1198	50.35	1199	50.71
1200	51.02	1201	51.28	1202	51.50	1203	51.68	1204	51.84
1205	51.97	1206	52.08	1207	52.17	1208	52.26	1209	52.34
1210	52.43	1211	52.52	1212	52.61	1213	52.72	1214	52.84
1215	52.98	1216	53.14	1217	53.31	1218	53.50	1219	53.71
1220	53.93	1221	54.17	1222	54.43	1223	54.70	1224	54.98
1225	55.27	1226	55.57	1227	55.89	1228	56.21	1229	56.53
1230	56.86	1231	57.20	1232	57.54	1233	57.88	1234	58.23
1235	58.58	1236	58.93	1237	59.29	1238	59.66	1239	60.03
1240	60.40	1241	60.78	1242	61.16	1243	61.54	1244	61.93
1245	62.32	1246	62.70	1247	63.08	1248	63.45	1249	63.81
1250	64.15	1251	64.48	1252	64.78	1253	65.06	1254	65.31
1255	65.52	1256	65.70	1257	65.85	1258	65.95	1259	66.01
1260	66.02	1261	66.00	1262	65.93	1263	65.82	1264	65.66
1265	65.46	1266	65.22	1267	64.95	1268	64.63	1269	64.28
1270	63.90	1271	63.49	1272	63.04	1273	62.58	1274	62.08
1275	61.56	1276	61.03	1277	60.47	1278	59.90	1279	59.32
1280	58.72	1281	58.11	1282	57.49	1283	56.87	1284	56.24
1285	55.60	1286	54.96	1287	54.32	1288	53.68	1289	53.04
1290	52.39	1291	51.75	1292	51.12	1293	50.48	1294	49.85
1295	49.22	1296	48.60	1297	47.98	1298	47.37	1299	46.76
1300	46.16	1310	40.62	1320	35.86	1330	31.80	1340	28.42
1350	25.61	1360	23.29	1370	21.36	1380	19.73	1390	18.41
1400	17.30	1420	15.59	1440	14.35	1460	13.29	1500	11.38

TOTAL VOLUME THIS HYDROGRAPH = 36.49(Ac.Ft)

Program Package Serial Number: 2173
04/16/10 FILE: AREA6 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 2
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE:

HYDROGRAPH AT 3434 24A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	.00	100	7.23	200	7.32	300	7.56	400	7.93
500	8.38	600	8.94	700	9.63	800	10.53	900	11.79
1000	13.72	1050	15.34	1100	18.14	1110	18.85	1120	19.64
1130	20.63	1131	20.74	1132	20.85	1133	20.97	1134	21.09
1135	21.21	1136	21.34	1137	21.46	1138	21.59	1139	21.73
1140	21.86	1141	22.00	1142	22.15	1143	22.30	1144	22.45
1145	22.60	1146	22.76	1147	22.93	1148	23.10	1149	23.28
1150	23.46	1151	23.65	1152	23.85	1153	24.06	1154	24.27
1155	24.50	1156	24.74	1157	25.01	1158	25.29	1159	25.60
1160	25.93	1161	26.28	1162	26.64	1163	27.02	1164	27.43
1165	27.85	1166	28.29	1167	28.74	1168	29.22	1169	29.70
1170	30.20	1171	30.70	1172	31.21	1173	31.73	1174	32.25
1175	32.77	1176	33.28	1177	33.79	1178	34.30	1179	34.80
1180	35.29	1181	35.77	1182	36.24	1183	36.69	1184	37.13
1185	37.55	1186	37.94	1187	38.30	1188	38.63	1189	38.92
1190	39.19	1191	39.44	1192	39.67	1193	39.87	1194	40.04
1195	40.19	1196	40.33	1197	40.44	1198	40.54	1199	40.63
1200	40.70	1201	40.77	1202	40.84	1203	40.90	1204	40.96
1205	41.02	1206	41.08	1207	41.14	1208	41.21	1209	41.27
1210	41.35	1211	41.42	1212	41.51	1213	41.60	1214	41.69
1215	41.80	1216	41.91	1217	42.03	1218	42.16	1219	42.29
1220	42.43	1221	42.57	1222	42.72	1223	42.87	1224	43.03
1225	43.18	1226	43.34	1227	43.49	1228	43.63	1229	43.77
1230	43.90	1231	44.02	1232	44.12	1233	44.21	1234	44.28
1235	44.33	1236	44.37	1237	44.38	1238	44.37	1239	44.34
1240	44.29	1241	44.21	1242	44.11	1243	43.99	1244	43.84
1245	43.68	1246	43.49	1247	43.28	1248	43.05	1249	42.81
1250	42.55	1251	42.27	1252	41.97	1253	41.67	1254	41.35
1255	41.02	1256	40.68	1257	40.33	1258	39.97	1259	39.60
1260	39.23	1261	38.86	1262	38.48	1263	38.09	1264	37.71
1265	37.32	1266	36.93	1267	36.54	1268	36.15	1269	35.76
1270	35.37	1271	34.98	1272	34.59	1273	34.21	1274	33.83
1275	33.45	1276	33.07	1277	32.69	1278	32.32	1279	31.95
1280	31.59	1281	31.23	1282	30.87	1283	30.52	1284	30.16
1285	29.82	1286	29.48	1287	29.14	1288	28.80	1289	28.47
1290	28.15	1291	27.83	1292	27.51	1293	27.20	1294	26.89
1295	26.58	1296	26.28	1297	25.98	1298	25.69	1299	25.40
1300	25.12	1310	22.51	1320	20.30	1330	18.43	1340	16.83
1350	15.46	1360	14.33	1370	13.38	1380	12.57	1390	11.88
1400	11.30	1420	10.38	1440	9.68	1460	9.02	1500	7.66

TOTAL VOLUME THIS HYDROGRAPH = 26.48(Ac.Ft)

Program Package Serial Number: 2173
04/16/10 FILE: AREA7 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 2
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE:

HYDROGRAPH AT 3434 37A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	.00	100	12.97	200	13.13	300	13.57	400	14.22
500	15.03	600	16.02	700	17.28	800	18.90	900	21.16
1000	24.67	1050	27.67	1100	32.85	1110	34.18	1120	35.72
1130	37.68	1131	37.90	1132	38.12	1133	38.34	1134	38.57
1135	38.80	1136	39.04	1137	39.29	1138	39.55	1139	39.81
1140	40.08	1141	40.35	1142	40.64	1143	40.93	1144	41.24
1145	41.56	1146	41.88	1147	42.23	1148	42.58	1149	42.96
1150	43.35	1151	43.78	1152	44.25	1153	44.76	1154	45.32
1155	45.93	1156	46.57	1157	47.23	1158	47.92	1159	48.64
1160	49.37	1161	50.12	1162	50.88	1163	51.64	1164	52.41
1165	53.17	1166	53.93	1167	54.69	1168	55.46	1169	56.22
1170	56.99	1171	57.77	1172	58.55	1173	59.34	1174	60.14
1175	60.94	1176	61.74	1177	62.54	1178	63.33	1179	64.12
1180	64.89	1181	65.64	1182	66.33	1183	66.99	1184	67.60
1185	68.17	1186	68.71	1187	69.24	1188	69.74	1189	70.24
1190	70.73	1191	71.22	1192	71.71	1193	72.21	1194	72.71
1195	73.22	1196	73.73	1197	74.23	1198	74.71	1199	75.19
1200	75.64	1201	76.07	1202	76.48	1203	76.86	1204	77.21
1205	77.54	1206	77.84	1207	78.11	1208	78.36	1209	78.59
1210	78.80	1211	79.00	1212	79.20	1213	79.40	1214	79.62
1215	79.87	1216	80.18	1217	80.56	1218	81.03	1219	81.61
1220	82.32	1221	83.15	1222	84.10	1223	85.18	1224	86.35
1225	87.58	1226	88.85	1227	90.10	1228	91.29	1229	92.39
1230	93.36	1231	94.16	1232	94.78	1233	95.20	1234	95.43
1235	95.46	1236	95.29	1237	94.95	1238	94.44	1239	93.79
1240	93.01	1241	92.12	1242	91.13	1243	90.06	1244	88.93
1245	87.75	1246	86.54	1247	85.29	1248	84.03	1249	82.76
1250	81.50	1251	80.24	1252	78.99	1253	77.77	1254	76.56
1255	75.38	1256	74.24	1257	73.12	1258	72.04	1259	71.00
1260	70.00	1261	69.04	1262	68.12	1263	67.24	1264	66.41
1265	65.61	1266	64.86	1267	64.15	1268	63.48	1269	62.84
1270	62.24	1271	61.67	1272	61.14	1273	60.63	1274	60.14
1275	59.67	1276	59.22	1277	58.79	1278	58.36	1279	57.94
1280	57.53	1281	57.11	1282	56.70	1283	56.28	1284	55.86
1285	55.44	1286	55.00	1287	54.56	1288	54.11	1289	53.65
1290	53.19	1291	52.71	1292	52.23	1293	51.74	1294	51.24
1295	50.74	1296	50.23	1297	49.72	1298	49.20	1299	48.68
1300	48.16	1310	43.07	1320	38.45	1330	34.50	1340	31.19
1350	28.38	1360	26.11	1370	24.24	1380	22.69	1390	21.37
1400	20.29	1420	18.60	1440	17.36	1460	16.00	1500	13.24

TOTAL VOLUME THIS HYDROGRAPH = 48.49(Ac.Ft)

ATTACHMENT 6

Existing Conditions
Unit Hydrographs
(Burn Conditions)

Program Package Serial Number: 2173
04/16/10 FILE: AREA1 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 2
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE:

HYDROGRAPH AT 3434 11A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	.00	100	13.90	200	14.19	300	14.83	400	15.64
500	16.60	600	17.75	700	19.24	800	21.19	900	23.94
1000	28.36	1050	32.75	1100	40.63	1110	42.62	1120	45.07
1130	48.50	1131	48.91	1132	49.32	1133	49.73	1134	50.16
1135	50.60	1136	51.07	1137	51.55	1138	52.05	1139	52.57
1140	53.10	1141	53.66	1142	54.25	1143	54.85	1144	55.49
1145	56.15	1146	56.84	1147	57.56	1148	58.32	1149	59.13
1150	59.99	1151	60.90	1152	61.93	1153	63.13	1154	64.47
1155	65.92	1156	67.50	1157	69.13	1158	70.80	1159	72.53
1160	74.32	1161	76.19	1162	78.13	1163	80.12	1164	82.18
1165	84.29	1166	86.45	1167	88.65	1168	90.87	1169	93.11
1170	95.34	1171	97.53	1172	99.67	1173	101.73	1174	103.69
1175	105.53	1176	107.24	1177	108.79	1178	110.18	1179	111.39
1180	112.44	1181	113.28	1182	113.83	1183	114.10	1184	114.13
1185	113.92	1186	113.49	1187	112.92	1188	112.23	1189	111.39
1190	110.41	1191	109.31	1192	108.09	1193	106.77	1194	105.35
1195	103.85	1196	102.28	1197	100.65	1198	98.98	1199	97.27
1200	95.55	1201	93.83	1202	92.12	1203	90.43	1204	88.77
1205	87.15	1206	85.56	1207	84.03	1208	82.54	1209	81.11
1210	79.72	1211	78.38	1212	77.08	1213	75.83	1214	74.63
1215	73.46	1216	72.34	1217	71.24	1218	70.19	1219	69.16
1220	68.17	1221	67.21	1222	66.27	1223	65.36	1224	64.48
1225	63.61	1226	62.77	1227	61.94	1228	61.14	1229	60.36
1230	59.59	1231	58.84	1232	58.10	1233	57.37	1234	56.65
1235	55.95	1236	55.27	1237	54.59	1238	53.92	1239	53.26
1240	52.62	1241	51.99	1242	51.36	1243	50.75	1244	50.14
1245	49.54	1246	48.95	1247	48.36	1248	47.78	1249	47.20
1250	46.63	1251	46.07	1252	45.52	1253	44.99	1254	44.46
1255	43.93	1256	43.42	1257	42.92	1258	42.43	1259	41.95
1260	41.47	1261	41.01	1262	40.56	1263	40.12	1264	39.68
1265	39.24	1266	38.81	1267	38.38	1268	37.96	1269	37.55
1270	37.14	1271	36.73	1272	36.34	1273	35.95	1274	35.57
1275	35.19	1276	34.82	1277	34.46	1278	34.11	1279	33.76
1280	33.43	1281	33.11	1282	32.81	1283	32.51	1284	32.21
1285	31.92	1286	31.63	1287	31.35	1288	31.07	1289	30.79
1290	30.52	1291	30.25	1292	29.99	1293	29.73	1294	29.48
1295	29.23	1296	28.99	1297	28.75	1298	28.52	1299	28.30
1300	28.09	1310	26.14	1320	24.48	1330	23.12	1340	21.96
1350	20.97	1360	20.12	1370	19.38	1380	18.72	1390	18.12
1400	17.57	1420	16.65	1440	15.90	1460	14.48	1500	13.90

TOTAL VOLUME THIS HYDROGRAPH = 50.17(Ac.Ft)

Program Package Serial Number: 2173
04/16/10 FILE: AREA1A INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 2
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE:

HYDROGRAPH AT 3434 2A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	.00	100	.53	200	.54	300	.57	400	.60
500	.64	600	.69	700	.75	800	.83	900	.94
1000	1.12	1050	1.33	1100	1.69	1110	1.77	1120	1.88
1130	2.05	1131	2.07	1132	2.10	1133	2.12	1134	2.15
1135	2.18	1136	2.21	1137	2.24	1138	2.27	1139	2.30
1140	2.33	1141	2.37	1142	2.40	1143	2.43	1144	2.47
1145	2.51	1146	2.55	1147	2.59	1148	2.63	1149	2.67
1150	2.72	1151	2.77	1152	2.82	1153	2.88	1154	2.94
1155	3.01	1156	3.08	1157	3.17	1158	3.29	1159	3.44
1160	3.62	1161	3.82	1162	4.02	1163	4.21	1164	4.39
1165	4.55	1166	4.70	1167	4.83	1168	4.95	1169	5.06
1170	5.15	1171	5.23	1172	5.30	1173	5.36	1174	5.40
1175	5.43	1176	5.46	1177	5.47	1178	5.47	1179	5.46
1180	5.45	1181	5.42	1182	5.39	1183	5.35	1184	5.30
1185	5.23	1186	5.16	1187	5.07	1188	4.96	1189	4.83
1190	4.67	1191	4.50	1192	4.31	1193	4.12	1194	3.93
1195	3.76	1196	3.59	1197	3.44	1198	3.30	1199	3.16
1200	3.04	1201	2.92	1202	2.81	1203	2.71	1204	2.62
1205	2.53	1206	2.45	1207	2.37	1208	2.30	1209	2.23
1210	2.17	1211	2.11	1212	2.05	1213	2.00	1214	1.95
1215	1.90	1216	1.86	1217	1.82	1218	1.78	1219	1.74
1220	1.71	1221	1.67	1222	1.64	1223	1.61	1224	1.58
1225	1.55	1226	1.53	1227	1.50	1228	1.48	1229	1.45
1230	1.43	1231	1.41	1232	1.39	1233	1.37	1234	1.35
1235	1.34	1236	1.32	1237	1.30	1238	1.29	1239	1.27
1240	1.26	1241	1.24	1242	1.23	1243	1.21	1244	1.20
1245	1.19	1246	1.18	1247	1.16	1248	1.15	1249	1.14
1250	1.13	1251	1.12	1252	1.11	1253	1.10	1254	1.09
1255	1.08	1256	1.08	1257	1.07	1258	1.06	1259	1.05
1260	1.04	1261	1.03	1262	1.03	1263	1.02	1264	1.01
1265	1.00	1266	1.00	1267	.99	1268	.98	1269	.98
1270	.97	1271	.97	1272	.96	1273	.95	1274	.95
1275	.94	1276	.94	1277	.93	1278	.93	1279	.92
1280	.92	1281	.91	1282	.91	1283	.90	1284	.90
1285	.89	1286	.89	1287	.88	1288	.88	1289	.87
1290	.87	1291	.86	1292	.86	1293	.86	1294	.85
1295	.85	1296	.84	1297	.84	1298	.84	1299	.83
1300	.83	1310	.79	1320	.76	1330	.73	1340	.71
1350	.69	1360	.67	1370	.66	1380	.64	1390	.62
1400	.61	1420	.58	1440	.56	1460	.53	1500	.53

TOTAL VOLUME THIS HYDROGRAPH = 1.90(Ac.Ft)

Program Package Serial Number: 2173
04/16/10 FILE: AREA1B INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 2
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE:

HYDROGRAPH AT 3434 4A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	.00	100	1.45	200	1.50	300	1.58	400	1.66
500	1.77	600	1.89	700	2.05	800	2.27	900	2.58
1000	3.09	1050	3.65	1100	4.62	1110	4.87	1120	5.20
1130	5.70	1131	5.77	1132	5.83	1133	5.89	1134	5.96
1135	6.03	1136	6.10	1137	6.17	1138	6.25	1139	6.33
1140	6.41	1141	6.50	1142	6.59	1143	6.69	1144	6.79
1145	6.89	1146	7.00	1147	7.12	1148	7.24	1149	7.38
1150	7.53	1151	7.68	1152	7.87	1153	8.10	1154	8.38
1155	8.70	1156	9.05	1157	9.40	1158	9.73	1159	10.04
1160	10.35	1161	10.66	1162	10.98	1163	11.30	1164	11.63
1165	11.94	1166	12.24	1167	12.51	1168	12.77	1169	13.01
1170	13.23	1171	13.42	1172	13.60	1173	13.75	1174	13.88
1175	13.99	1176	14.08	1177	14.14	1178	14.18	1179	14.19
1180	14.16	1181	14.12	1182	14.01	1183	13.85	1184	13.62
1185	13.35	1186	13.05	1187	12.73	1188	12.44	1189	12.15
1190	11.87	1191	11.57	1192	11.26	1193	10.95	1194	10.63
1195	10.31	1196	10.00	1197	9.70	1198	9.41	1199	9.12
1200	8.86	1201	8.60	1202	8.35	1203	8.10	1204	7.87
1205	7.65	1206	7.43	1207	7.22	1208	7.02	1209	6.83
1210	6.64	1211	6.46	1212	6.29	1213	6.13	1214	5.97
1215	5.82	1216	5.68	1217	5.54	1218	5.41	1219	5.29
1220	5.17	1221	5.05	1222	4.94	1223	4.84	1224	4.74
1225	4.65	1226	4.56	1227	4.48	1228	4.40	1229	4.32
1230	4.24	1231	4.17	1232	4.10	1233	4.03	1234	3.97
1235	3.91	1236	3.85	1237	3.79	1238	3.73	1239	3.68
1240	3.64	1241	3.59	1242	3.55	1243	3.50	1244	3.46
1245	3.42	1246	3.38	1247	3.34	1248	3.31	1249	3.27
1250	3.24	1251	3.20	1252	3.17	1253	3.14	1254	3.11
1255	3.08	1256	3.05	1257	3.03	1258	3.00	1259	2.98
1260	2.95	1261	2.93	1262	2.91	1263	2.88	1264	2.86
1265	2.84	1266	2.82	1267	2.80	1268	2.78	1269	2.76
1270	2.74	1271	2.72	1272	2.70	1273	2.68	1274	2.66
1275	2.65	1276	2.63	1277	2.61	1278	2.60	1279	2.58
1280	2.57	1281	2.55	1282	2.54	1283	2.52	1284	2.51
1285	2.50	1286	2.48	1287	2.47	1288	2.46	1289	2.44
1290	2.43	1291	2.42	1292	2.40	1293	2.39	1294	2.38
1295	2.37	1296	2.36	1297	2.35	1298	2.34	1299	2.32
1300	2.31	1310	2.21	1320	2.12	1330	2.05	1340	1.98
1350	1.92	1360	1.87	1370	1.82	1380	1.77	1390	1.72
1400	1.68	1420	1.61	1440	1.55	1460	1.45	1500	1.45

TOTAL VOLUME THIS HYDROGRAPH = 5.24(Ac.Ft)

Program Package Serial Number: 2173
04/19/10 FILE: AREA2 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 11
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE:

HYDROGRAPH AT 3434 230A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	.00	100	135.44	200	136.47	300	140.16	400	146.50
500	154.59	600	164.52	700	176.94	800	192.92	900	215.00
1000	248.70	1050	274.51	1100	317.98	1110	329.19	1120	341.50
1130	355.98	1131	357.53	1132	359.08	1133	360.65	1134	362.25
1135	363.89	1136	365.55	1137	367.24	1138	368.96	1139	370.71
1140	372.50	1141	374.32	1142	376.18	1143	378.08	1144	380.02
1145	381.99	1146	384.02	1147	386.10	1148	388.23	1149	390.42
1150	392.68	1151	395.06	1152	397.58	1153	400.19	1154	402.92
1155	405.73	1156	408.59	1157	411.47	1158	414.40	1159	417.40
1160	420.48	1161	423.64	1162	426.91	1163	430.29	1164	433.79
1165	437.40	1166	441.12	1167	444.92	1168	448.81	1169	452.78
1170	456.81	1171	460.91	1172	465.10	1173	469.37	1174	473.75
1175	478.26	1176	482.89	1177	487.67	1178	492.60	1179	497.69
1180	502.94	1181	508.29	1182	513.75	1183	519.34	1184	525.06
1185	530.92	1186	536.99	1187	543.26	1188	549.71	1189	556.32
1190	563.07	1191	569.97	1192	576.99	1193	584.15	1194	591.46
1195	598.96	1196	606.67	1197	614.65	1198	622.91	1199	631.49
1200	640.42	1201	649.72	1202	659.42	1203	669.53	1204	680.09
1205	691.15	1206	702.75	1207	714.98	1208	727.91	1209	741.65
1210	756.30	1211	771.96	1212	788.72	1213	806.63	1214	825.70
1215	845.87	1216	867.00	1217	888.92	1218	911.39	1219	934.12
1220	956.88	1221	979.47	1222	1001.82	1223	1023.97	1224	1046.11
1225	1068.54	1226	1091.62	1227	1115.65	1228	1140.77	1229	1166.87
1230	1193.48	1231	1219.85	1232	1245.01	1233	1267.90	1234	1287.57
1235	1303.25	1236	1314.47	1237	1321.03	1238	1323.00	1239	1320.66
1240	1314.40	1241	1304.71	1242	1292.10	1243	1277.08	1244	1260.11
1245	1241.60	1246	1221.93	1247	1201.40	1248	1180.31	1249	1158.86
1250	1137.23	1251	1115.57	1252	1094.00	1253	1072.62	1254	1051.51
1255	1030.71	1256	1010.27	1257	990.22	1258	970.59	1259	951.37
1260	932.58	1261	914.23	1262	896.32	1263	878.89	1264	861.87
1265	845.27	1266	829.09	1267	813.32	1268	797.98	1269	783.02
1270	768.44	1271	754.25	1272	740.41	1273	726.94	1274	713.81
1275	701.03	1276	688.57	1277	676.44	1278	664.62	1279	653.10
1280	641.88	1281	630.95	1282	620.30	1283	609.93	1284	599.82
1285	589.98	1286	580.38	1287	571.04	1288	561.94	1289	553.06
1290	544.42	1291	536.01	1292	527.80	1293	519.81	1294	512.03
1295	504.45	1296	497.06	1297	489.86	1298	482.84	1299	476.01
1300	469.36	1310	412.86	1320	369.68	1330	335.17	1340	307.74
1350	285.05	1360	266.66	1370	251.43	1380	238.51	1390	227.20
1400	217.36	1420	201.48	1440	188.60	1460	177.11	1500	155.87

TOTAL VOLUME THIS HYDROGRAPH = 503.56(Ac.Ft)

Program Package Serial Number: 2173
04/16/10 FILE: AREA3 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 26
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE:

HYDROGRAPH AT 3434 527A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	.00	100	357.99	200	360.98	300	371.89	400	389.84
500	411.57	600	438.34	700	471.98	800	515.40	900	575.93
1000	669.16	1050	742.02	1100	869.75	1110	903.17	1120	939.75
1130	982.60	1131	987.17	1132	991.73	1133	996.36	1134	1001.10
1135	1005.93	1136	1010.83	1137	1015.82	1138	1020.90	1139	1026.08
1140	1031.35	1141	1036.73	1142	1042.21	1143	1047.82	1144	1053.54
1145	1059.39	1146	1065.39	1147	1071.53	1148	1077.84	1149	1084.32
1150	1090.98	1151	1097.87	1152	1105.01	1153	1112.40	1154	1120.07
1155	1128.04	1156	1136.33	1157	1144.94	1158	1153.92	1159	1163.27
1160	1173.01	1161	1183.11	1162	1193.56	1163	1204.31	1164	1215.37
1165	1226.73	1166	1238.40	1167	1250.42	1168	1262.85	1169	1275.76
1170	1289.22	1171	1303.31	1172	1318.11	1173	1333.69	1174	1350.12
1175	1367.45	1176	1385.72	1177	1404.96	1178	1425.21	1179	1446.51
1180	1468.90	1181	1492.41	1182	1517.14	1183	1543.22	1184	1570.81
1185	1600.13	1186	1631.50	1187	1665.26	1188	1701.87	1189	1741.89
1190	1786.03	1191	1835.13	1192	1890.11	1193	1951.97	1194	2021.67
1195	2100.12	1196	2188.13	1197	2286.37	1198	2395.51	1199	2516.31
1200	2649.66	1201	2796.61	1202	2957.94	1203	3133.60	1204	3321.82
1205	3518.36	1206	3716.44	1207	3907.38	1208	4082.03	1209	4232.41
1210	4352.94	1211	4441.03	1212	4496.83	1213	4522.56	1214	4521.73
1215	4498.35	1216	4456.48	1217	4399.86	1218	4331.83	1219	4255.00
1220	4171.95	1221	4084.24	1222	3993.60	1223	3901.15	1224	3807.91
1225	3714.53	1226	3621.86	1227	3529.93	1228	3439.83	1229	3350.82
1230	3264.48	1231	3179.40	1232	3097.21	1233	3016.66	1234	2938.80
1235	2862.97	1236	2789.61	1237	2718.46	1238	2649.61	1239	2582.98
1240	2518.53	1241	2456.22	1242	2396.01	1243	2337.78	1244	2281.61
1245	2227.21	1246	2174.87	1247	2124.09	1248	2075.28	1249	2027.99
1250	1982.32	1251	1938.31	1252	1895.75	1253	1854.63	1254	1815.00
1255	1776.68	1256	1739.66	1257	1703.92	1258	1669.39	1259	1636.03
1260	1603.80	1261	1572.67	1262	1542.58	1263	1513.50	1264	1485.39
1265	1458.22	1266	1431.97	1267	1406.58	1268	1382.02	1269	1358.27
1270	1335.30	1271	1313.08	1272	1291.59	1273	1270.78	1274	1250.67
1275	1231.19	1276	1212.35	1277	1194.12	1278	1176.47	1279	1159.39
1280	1142.87	1281	1126.87	1282	1111.39	1283	1096.40	1284	1081.89
1285	1067.84	1286	1054.23	1287	1041.05	1288	1028.28	1289	1015.91
1290	1003.93	1291	992.34	1292	981.11	1293	970.17	1294	959.56
1295	949.27	1296	939.36	1297	929.73	1298	920.36	1299	911.24
1300	902.42	1310	828.02	1320	772.72	1330	730.27	1340	694.95
1350	663.95	1360	636.67	1370	611.30	1380	588.72	1390	568.48
1400	549.68	1420	516.22	1440	488.15	1460	461.74	1500	412.28

TOTAL VOLUME THIS HYDROGRAPH = 1336.14(Ac.Ft)

Program Package Serial Number: 2173
04/16/10 FILE: AREA4 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 2
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE:

HYDROGRAPH AT 3434 30A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	.00	100	42.44	200	43.04	300	44.69	400	47.00
500	49.75	600	53.13	700	57.38	800	62.92	900	70.73
1000	82.98	1050	92.66	1100	110.51	1110	115.25	1120	120.41
1130	126.48	1131	127.13	1132	127.79	1133	128.45	1134	129.12
1135	129.81	1136	130.52	1137	131.24	1138	131.98	1139	132.73
1140	133.51	1141	134.30	1142	135.11	1143	135.95	1144	136.80
1145	137.69	1146	138.60	1147	139.55	1148	140.52	1149	141.53
1150	142.58	1151	143.68	1152	144.83	1153	146.07	1154	147.37
1155	148.74	1156	150.19	1157	151.68	1158	153.22	1159	154.81
1160	156.45	1161	158.14	1162	159.88	1163	161.68	1164	163.51
1165	165.40	1166	167.32	1167	169.29	1168	171.32	1169	173.40
1170	175.55	1171	177.80	1172	180.14	1173	182.60	1174	185.20
1175	187.94	1176	190.83	1177	193.88	1178	197.08	1179	200.44
1180	203.95	1181	207.61	1182	211.43	1183	215.39	1184	219.50
1185	223.75	1186	228.14	1187	232.68	1188	237.35	1189	242.16
1190	247.09	1191	252.14	1192	257.29	1193	262.52	1194	267.81
1195	273.13	1196	278.45	1197	283.73	1198	288.91	1199	293.97
1200	298.86	1201	303.54	1202	307.99	1203	312.20	1204	316.14
1205	319.83	1206	323.25	1207	326.42	1208	329.32	1209	331.95
1210	334.31	1211	336.40	1212	338.20	1213	339.70	1214	340.90
1215	341.78	1216	342.33	1217	342.54	1218	342.41	1219	341.94
1220	341.13	1221	339.98	1222	338.50	1223	336.71	1224	334.61
1225	332.22	1226	329.56	1227	326.65	1228	323.51	1229	320.16
1230	316.62	1231	312.91	1232	309.05	1233	305.06	1234	300.96
1235	296.77	1236	292.51	1237	288.18	1238	283.80	1239	279.39
1240	274.95	1241	270.51	1242	266.07	1243	261.63	1244	257.20
1245	252.80	1246	248.42	1247	244.07	1248	239.76	1249	235.48
1250	231.23	1251	227.00	1252	222.78	1253	218.59	1254	214.42
1255	210.29	1256	206.21	1257	202.21	1258	198.26	1259	194.39
1260	190.57	1261	186.84	1262	183.18	1263	179.60	1264	176.10
1265	172.70	1266	169.39	1267	166.16	1268	163.03	1269	160.00
1270	157.05	1271	154.19	1272	151.43	1273	148.75	1274	146.16
1275	143.65	1276	141.23	1277	138.90	1278	136.64	1279	134.46
1280	132.36	1281	130.33	1282	128.38	1283	126.49	1284	124.65
1285	122.88	1286	121.17	1287	119.53	1288	117.93	1289	116.38
1290	114.90	1291	113.45	1292	112.03	1293	110.68	1294	109.34
1295	108.04	1296	106.76	1297	105.51	1298	104.29	1299	103.11
1300	101.96	1310	92.53	1320	85.75	1330	80.16	1340	75.58
1350	71.70	1360	68.48	1370	65.64	1380	63.13	1390	60.94
1400	58.91	1420	55.45	1440	52.56	1460	49.67	1500	43.49

TOTAL VOLUME THIS HYDROGRAPH = 154.95(Ac.Ft)

Program Package Serial Number: 2173
04/16/10 FILE: AREA5 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 3
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE:

HYDROGRAPH AT 3434 41A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	.00	100	37.80	200	38.27	300	39.66	400	41.67
500	44.07	600	47.05	700	50.78	800	55.61	900	62.40
1000	72.99	1050	81.90	1100	97.81	1110	101.91	1120	106.53
1130	112.24	1131	112.88	1132	113.53	1133	114.18	1134	114.84
1135	115.52	1136	116.21	1137	116.93	1138	117.66	1139	118.42
1140	119.19	1141	119.98	1142	120.80	1143	121.65	1144	122.52
1145	123.42	1146	124.34	1147	125.30	1148	126.28	1149	127.31
1150	128.37	1151	129.47	1152	130.64	1153	131.90	1154	133.27
1155	134.75	1156	136.32	1157	137.97	1158	139.67	1159	141.40
1160	143.17	1161	144.99	1162	146.85	1163	148.76	1164	150.72
1165	152.75	1166	154.87	1167	157.11	1168	159.50	1169	162.07
1170	164.82	1171	167.75	1172	170.87	1173	174.17	1174	177.61
1175	181.17	1176	184.82	1177	188.52	1178	192.24	1179	195.94
1180	199.58	1181	203.14	1182	206.55	1183	209.74	1184	212.72
1185	215.48	1186	218.01	1187	220.36	1188	222.58	1189	224.68
1190	226.68	1191	228.61	1192	230.48	1193	232.33	1194	234.15
1195	235.97	1196	237.78	1197	239.61	1198	241.46	1199	243.34
1200	245.25	1201	247.20	1202	249.18	1203	251.18	1204	253.17
1205	255.15	1206	257.09	1207	258.98	1208	260.79	1209	262.52
1210	264.16	1211	265.69	1212	267.10	1213	268.39	1214	269.54
1215	270.55	1216	271.42	1217	272.14	1218	272.70	1219	273.10
1220	273.32	1221	273.36	1222	273.22	1223	272.88	1224	272.35
1225	271.62	1226	270.68	1227	269.54	1228	268.20	1229	266.67
1230	264.95	1231	263.04	1232	260.95	1233	258.70	1234	256.30
1235	253.75	1236	251.07	1237	248.28	1238	245.39	1239	242.40
1240	239.34	1241	236.20	1242	233.02	1243	229.79	1244	226.52
1245	223.23	1246	219.93	1247	216.61	1248	213.30	1249	209.99
1250	206.70	1251	203.43	1252	200.18	1253	196.96	1254	193.78
1255	190.62	1256	187.51	1257	184.44	1258	181.41	1259	178.43
1260	175.49	1261	172.61	1262	169.77	1263	166.99	1264	164.26
1265	161.58	1266	158.95	1267	156.38	1268	153.86	1269	151.39
1270	148.97	1271	146.61	1272	144.29	1273	142.03	1274	139.82
1275	137.65	1276	135.54	1277	133.48	1278	131.46	1279	129.50
1280	127.58	1281	125.71	1282	123.88	1283	122.10	1284	120.37
1285	118.67	1286	117.02	1287	115.42	1288	113.85	1289	112.32
1290	110.83	1291	109.37	1292	107.96	1293	106.59	1294	105.25
1295	103.95	1296	102.69	1297	101.46	1298	100.26	1299	99.09
1300	97.95	1310	87.98	1320	80.33	1330	74.42	1340	69.73
1350	65.80	1360	62.51	1370	59.77	1380	57.34	1390	55.22
1400	53.36	1420	50.12	1440	47.43	1460	44.52	1500	38.76

TOTAL VOLUME THIS HYDROGRAPH = 137.48(Ac.Ft)

Program Package Serial Number: 2173
04/16/10 FILE: AREA6 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 2
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE:

HYDROGRAPH AT 3434 24A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	.00	100	27.93	200	28.39	300	29.58	400	31.14
500	32.98	600	35.24	700	38.11	800	41.85	900	47.15
1000	55.50	1050	63.10	1100	76.85	1110	80.35	1120	84.42
1130	89.73	1131	90.35	1132	90.97	1133	91.61	1134	92.26
1135	92.92	1136	93.60	1137	94.30	1138	95.02	1139	95.76
1140	96.52	1141	97.31	1142	98.13	1143	98.97	1144	99.85
1145	100.75	1146	101.68	1147	102.66	1148	103.66	1149	104.72
1150	105.82	1151	106.98	1152	108.20	1153	109.50	1154	110.93
1155	112.50	1156	114.21	1157	116.11	1158	118.16	1159	120.36
1160	122.71	1161	125.22	1162	127.86	1163	130.61	1164	133.47
1165	136.39	1166	139.37	1167	142.37	1168	145.37	1169	148.38
1170	151.37	1171	154.32	1172	157.25	1173	160.12	1174	162.94
1175	165.71	1176	168.42	1177	171.06	1178	173.64	1179	176.14
1180	178.57	1181	180.92	1182	183.18	1183	185.31	1184	187.27
1185	189.06	1186	190.66	1187	192.05	1188	193.25	1189	194.29
1190	195.16	1191	195.88	1192	196.47	1193	196.95	1194	197.35
1195	197.69	1196	197.97	1197	198.22	1198	198.43	1199	198.62
1200	198.77	1201	198.88	1202	198.96	1203	198.99	1204	198.95
1205	198.86	1206	198.68	1207	198.42	1208	198.06	1209	197.59
1210	197.01	1211	196.32	1212	195.49	1213	194.54	1214	193.47
1215	192.27	1216	190.94	1217	189.49	1218	187.93	1219	186.26
1220	184.49	1221	182.62	1222	180.67	1223	178.64	1224	176.54
1225	174.39	1226	172.18	1227	169.94	1228	167.66	1229	165.35
1230	163.03	1231	160.70	1232	158.36	1233	156.02	1234	153.69
1235	151.37	1236	149.07	1237	146.78	1238	144.52	1239	142.28
1240	140.07	1241	137.88	1242	135.73	1243	133.60	1244	131.51
1245	129.45	1246	127.43	1247	125.43	1248	123.48	1249	121.55
1250	119.66	1251	117.81	1252	115.99	1253	114.20	1254	112.45
1255	110.74	1256	109.06	1257	107.41	1258	105.80	1259	104.22
1260	102.67	1261	101.16	1262	99.68	1263	98.24	1264	96.82
1265	95.43	1266	94.08	1267	92.75	1268	91.45	1269	90.18
1270	88.92	1271	87.70	1272	86.50	1273	85.35	1274	84.22
1275	83.12	1276	82.05	1277	81.02	1278	80.01	1279	79.01
1280	78.05	1281	77.11	1282	76.18	1283	75.26	1284	74.36
1285	73.47	1286	72.60	1287	71.75	1288	70.91	1289	70.09
1290	69.28	1291	68.50	1292	67.74	1293	67.00	1294	66.29
1295	65.59	1296	64.91	1297	64.25	1298	63.63	1299	63.03
1300	62.43	1310	57.19	1320	53.13	1330	49.80	1340	47.06
1350	44.81	1360	42.86	1370	41.19	1380	39.71	1390	38.37
1400	37.16	1420	35.10	1440	33.40	1460	31.12	1500	27.93

TOTAL VOLUME THIS HYDROGRAPH = 101.27(Ac.Ft)

Program Package Serial Number: 2173
04/16/10 FILE: AREA7 INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 2
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE:

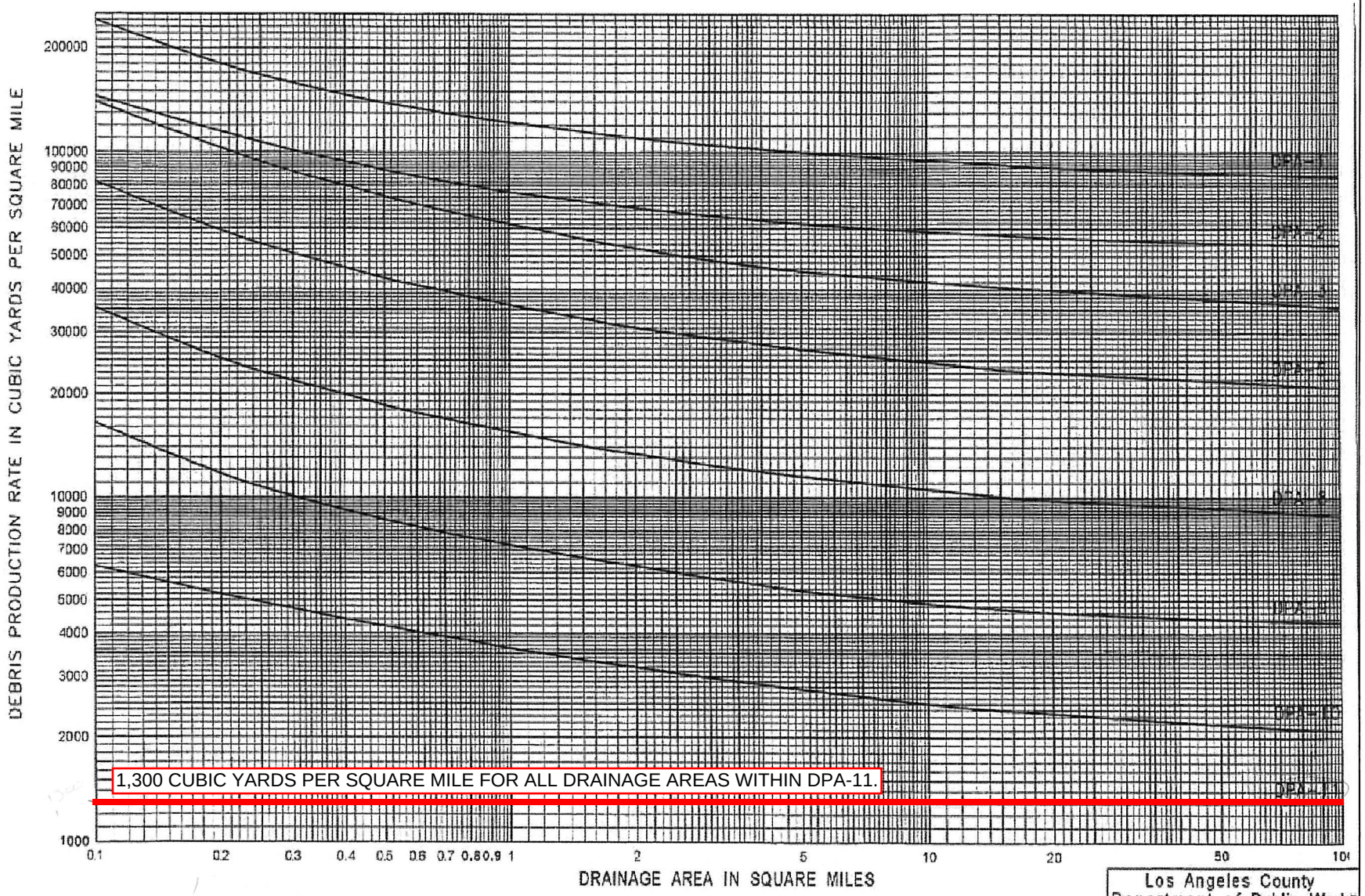
HYDROGRAPH AT 3434 37A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	.00	100	50.42	200	51.29	300	53.42	400	56.22
500	59.56	600	63.68	700	68.88	800	75.65	900	85.29
1000	100.56	1050	114.68	1100	140.07	1110	146.65	1120	154.46
1130	164.84	1131	166.02	1132	167.19	1133	168.39	1134	169.64
1135	170.92	1136	172.24	1137	173.59	1138	175.00	1139	176.45
1140	177.95	1141	179.51	1142	181.13	1143	182.81	1144	184.56
1145	186.38	1146	188.29	1147	190.29	1148	192.40	1149	194.61
1150	197.01	1151	199.68	1152	202.62	1153	205.87	1154	209.45
1155	213.32	1156	217.37	1157	221.58	1158	225.92	1159	230.33
1160	234.80	1161	239.32	1162	243.90	1163	248.56	1164	253.33
1165	258.20	1166	263.20	1167	268.30	1168	273.50	1169	278.77
1170	284.09	1171	289.43	1172	294.78	1173	300.10	1174	305.38
1175	310.62	1176	315.77	1177	320.82	1178	325.74	1179	330.52
1180	335.04	1181	339.19	1182	342.97	1183	346.30	1184	349.17
1185	351.67	1186	353.89	1187	355.89	1188	357.74	1189	359.48
1190	361.15	1191	362.79	1192	364.42	1193	366.08	1194	367.85
1195	369.78	1196	371.95	1197	374.39	1198	377.11	1199	380.06
1200	383.13	1201	386.20	1202	389.08	1203	391.59	1204	393.55
1205	394.83	1206	395.30	1207	394.90	1208	393.61	1209	391.44
1210	388.44	1211	384.68	1212	380.25	1213	375.25	1214	369.76
1215	363.88	1216	357.72	1217	351.34	1218	344.83	1219	338.26
1220	331.69	1221	325.16	1222	318.72	1223	312.41	1224	306.26
1225	300.29	1226	294.52	1227	288.97	1228	283.63	1229	278.51
1230	273.62	1231	268.95	1232	264.49	1233	260.24	1234	256.18
1235	252.31	1236	248.59	1237	245.02	1238	241.60	1239	238.29
1240	235.07	1241	231.95	1242	228.91	1243	225.92	1244	222.98
1245	220.08	1246	217.22	1247	214.37	1248	211.56	1249	208.75
1250	205.97	1251	203.19	1252	200.43	1253	197.69	1254	194.96
1255	192.25	1256	189.55	1257	186.88	1258	184.23	1259	181.60
1260	179.01	1261	176.45	1262	173.92	1263	171.43	1264	168.98
1265	166.57	1266	164.19	1267	161.82	1268	159.49	1269	157.20
1270	154.97	1271	152.80	1272	150.66	1273	148.57	1274	146.55
1275	144.58	1276	142.67	1277	140.82	1278	139.06	1279	137.31
1280	135.58	1281	133.88	1282	132.21	1283	130.56	1284	128.95
1285	127.37	1286	125.82	1287	124.30	1288	122.81	1289	121.35
1290	119.94	1291	118.56	1292	117.24	1293	115.99	1294	114.81
1295	113.68	1296	112.58	1297	111.49	1298	110.43	1299	109.38
1300	108.36	1310	99.69	1320	93.09	1330	87.56	1340	83.15
1350	79.39	1360	76.13	1370	73.32	1380	70.73	1390	68.40
1400	66.32	1420	62.78	1440	59.81	1460	55.07	1500	50.42

TOTAL VOLUME THIS HYDROGRAPH = 183.30(Ac.Ft)

ATTACHMENT 7

Sedimentation Calculations



Los Angeles County
Department of Public Works

DEBRIS PRODUCTION RATES
for Antelope Valley

DRAINAGE AREA 1 - SEDIMENTATION CALCULATION

3.3 SEDIMENT DELIVERY

The following sections show the procedures to determine sediment production from watersheds with different characteristics. Sediment production is used for the selection and sizing of sediment control/conveyance structures. See Example 1 in Appendix D.

Undeveloped Watershed

Use the following procedure to determine sediment production at the outlet of an undeveloped watershed that completely falls within the boundaries of one DPA zone:

1) Identify the DPA zone from the maps in Appendix A. DPA-11

2) Determine the drainage area (A) in square miles. 0.55 SQUARE MILES

3) Determine the Debris Production Rate (DPR) from curves in Appendix B-1, 2, or 3, corresponding to the DPA zone and the drainage area found in steps 1 and 2 above. For areas smaller than 0.1 square mile, use the same DPR for 0.1 square mile 1,300 CUBIC YARDS PER SQUARE MILE

4) Calculate the total Debris Production by multiplying the Debris Production Rate, from step 3, by the drainage area, from step 2. Equation 3.3.1 is used for single undeveloped watersheds within a single DPA Zone.

716.22 CUBIC YARDS

For a single watershed use Equation 3.3.1:

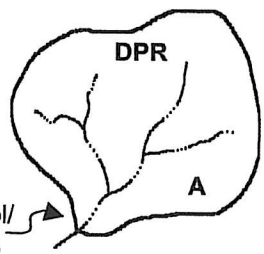


Figure 3.3.1
Debris Production for a Single Watershed

$$DP = DPR_{(A)} \times A$$

Equation 3.3.1

Where: DP = Debris Production in yd^3
DPR = Debris Production Rate in yd^3/mi^2

DRAINAGE AREA 1A - SEDIMENTATION CALCULATION

3.3 SEDIMENT DELIVERY

The following sections show the procedures to determine sediment production from watersheds with different characteristics. Sediment production is used for the selection and sizing of sediment control/conveyance structures. See Example 1 in Appendix D.

Undeveloped Watershed

Use the following procedure to determine sediment production at the outlet of an undeveloped watershed that completely falls within the boundaries of one DPA zone:

1) Identify the DPA zone from the maps in Appendix A. DPA-11

2) Determine the drainage area (A) in square miles. 0.02 SQUARE MILES

3) Determine the Debris Production Rate (DPR) from curves in Appendix B-1, 2, or 3, corresponding to the DPA zone and the drainage area found in steps 1 and 2 above. For areas smaller than 0.1 square mile, use the same DPR for 0.1 square mile 1,300 CUBIC YARDS PER SQUARE MILE

4) Calculate the total Debris Production by multiplying the Debris Production Rate, from step 3, by the drainage area, from step 2. Equation 3.3.1 is used for single undeveloped watersheds within a single DPA Zone.

27.22 CUBIC YARDS

For a single watershed use Equation 3.3.1:

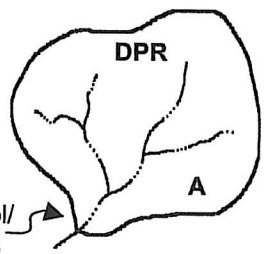


Figure 3.3.1
Debris Production for a Single Watershed

$$DP = DPR_{(A)} \times A$$

Equation 3.3.1

Where: DP = Debris Production in yd^3
DPR = Debris Production Rate in yd^3/mi^2

DRAINAGE AREA 1B - SEDIMENTATION CALCULATION

3.3 SEDIMENT DELIVERY

The following sections show the procedures to determine sediment production from watersheds with different characteristics. Sediment production is used for the selection and sizing of sediment control/conveyance structures. See Example 1 in Appendix D.

Undeveloped Watershed

Use the following procedure to determine sediment production at the outlet of an undeveloped watershed that completely falls within the boundaries of one DPA zone:

1) Identify the DPA zone from the maps in Appendix A. DPA-11

2) Determine the drainage area (A) in square miles. 0.06 SQUARE MILES

3) Determine the Debris Production Rate (DPR) from curves in Appendix B-1, 2, or 3, corresponding to the DPA zone and the drainage area found in steps 1 and 2 above. For areas smaller than 0.1 square mile, use the same DPR for 0.1 square mile 1,300 CUBIC YARDS PER SQUARE MILE

4) Calculate the total Debris Production by multiplying the Debris Production Rate, from step 3, by the drainage area, from step 2. Equation 3.3.1 is used for single undeveloped watersheds within a single DPA Zone.

71.50 CUBIC YARDS

For a single watershed use Equation 3.3.1:

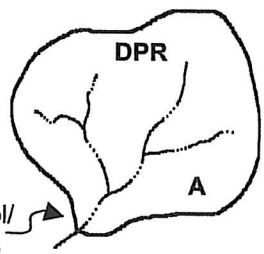


Figure 3.3.1
Debris Production for a Single Watershed

$$DP = DPR_{(A)} \times A$$

Equation 3.3.1

Where: DP = Debris Production in yd^3
DPR = Debris Production Rate in yd^3/mi^2

DRAINAGE AREA 2 - SEDIMENTATION CALCULATION

3.3 SEDIMENT DELIVERY

The following sections show the procedures to determine sediment production from watersheds with different characteristics. Sediment production is used for the selection and sizing of sediment control/conveyance structures. See Example 1 in Appendix D.

Undeveloped Watershed

Use the following procedure to determine sediment production at the outlet of an undeveloped watershed that completely falls within the boundaries of one DPA zone:

1) Identify the DPA zone from the maps in Appendix A. DPA-11

2) Determine the drainage area (A) in square miles. 4.05 SQUARE MILES

3) Determine the Debris Production Rate (DPR) from curves in Appendix B-1, 2, or 3, corresponding to the DPA zone and the drainage area found in steps 1 and 2 above. For areas smaller than 0.1 square mile, use the same DPR for 0.1 square mile 1,300 CUBIC YARDS PER SQUARE MILE

4) Calculate the total Debris Production by multiplying the Debris Production Rate, from step 3, by the drainage area, from step 2. Equation 3.3.1 is used for single undeveloped watersheds within a single DPA Zone.
5,263.78 CUBIC YARDS

For a single watershed use Equation 3.3.1:

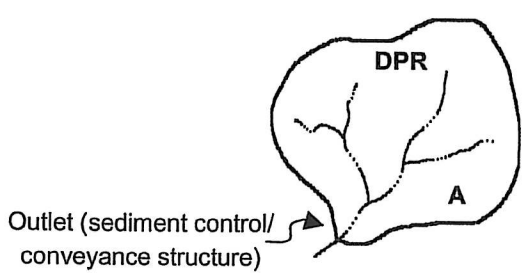


Figure 3.3.1
Debris Production for a Single Watershed

$$DP = DPR_{(A)} \times A$$

Equation 3.3.1

Where: DP = Debris Production in yd^3
DPR = Debris Production Rate in yd^3/mi^2

DRAINAGE AREA 3 - SEDIMENTATION CALCULATION

3.3 SEDIMENT DELIVERY

The following sections show the procedures to determine sediment production from watersheds with different characteristics. Sediment production is used for the selection and sizing of sediment control/conveyance structures. See Example 1 in Appendix D.

Undeveloped Watershed

Use the following procedure to determine sediment production at the outlet of an undeveloped watershed that completely falls within the boundaries of one DPA zone:

1) Identify the DPA zone from the maps in Appendix A. DPA-11

2) Determine the drainage area (A) in square miles. 9.40 SQUARE MILES

3) Determine the Debris Production Rate (DPR) from curves in Appendix B-1, 2, or 3, corresponding to the DPA zone and the drainage area found in steps 1 and 2 above. For areas smaller than 0.1 square mile, use the same DPR for 0.1 square mile 1,300 CUBIC YARDS PER SQUARE MILE

4) Calculate the total Debris Production by multiplying the Debris Production Rate, from step 3, by the drainage area, from step 2. Equation 3.3.1 is used for single undeveloped watersheds within a single DPA Zone.
12,213.70 CUBIC YARDS

For a single watershed use Equation 3.3.1:

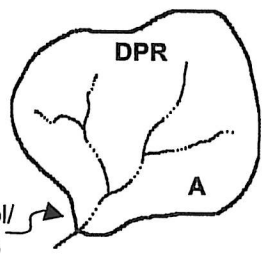


Figure 3.3.1
Debris Production for a Single Watershed

$$DP = DPR_{(A)} \times A$$

Equation 3.3.1

Where: DP = Debris Production in yd^3
DPR = Debris Production Rate in yd^3/mi^2

DRAINAGE AREA 4 - SEDIMENTATION CALCULATION

3.3 SEDIMENT DELIVERY

The following sections show the procedures to determine sediment production from watersheds with different characteristics. Sediment production is used for the selection and sizing of sediment control/conveyance structures. See Example 1 in Appendix D.

Undeveloped Watershed

Use the following procedure to determine sediment production at the outlet of an undeveloped watershed that completely falls within the boundaries of one DPA zone:

1) Identify the DPA zone from the maps in Appendix A. DPA-11

2) Determine the drainage area (A) in square miles. 1.34 SQUARE MILES

3) Determine the Debris Production Rate (DPR) from curves in Appendix B-1, 2, or 3, corresponding to the DPA zone and the drainage area found in steps 1 and 2 above. For areas smaller than 0.1 square mile, use the same DPR for 0.1 square mile 1,300 CUBIC YARDS PER SQUARE MILE

4) Calculate the total Debris Production by multiplying the Debris Production Rate, from step 3, by the drainage area, from step 2. Equation 3.3.1 is used for single undeveloped watersheds within a single DPA Zone.

1,744.64 CUBIC YARDS

For a single watershed use Equation 3.3.1:

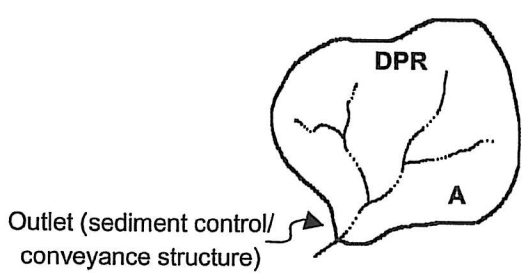


Figure 3.3.1
Debris Production for a Single Watershed

$$DP = DPR_{(A)} \times A$$

Equation 3.3.1

Where: DP = Debris Production in yd^3
DPR = Debris Production Rate in yd^3/mi^2

DRAINAGE AREA 5 - SEDIMENTATION CALCULATION

3.3 SEDIMENT DELIVERY

The following sections show the procedures to determine sediment production from watersheds with different characteristics. Sediment production is used for the selection and sizing of sediment control/conveyance structures. See Example 1 in Appendix D.

Undeveloped Watershed

Use the following procedure to determine sediment production at the outlet of an undeveloped watershed that completely falls within the boundaries of one DPA zone:

1) Identify the DPA zone from the maps in Appendix A. DPA-11

2) Determine the drainage area (A) in square miles. 1.20 SQUARE MILES

3) Determine the Debris Production Rate (DPR) from curves in Appendix B-1, 2, or 3, corresponding to the DPA zone and the drainage area found in steps 1 and 2 above. For areas smaller than 0.1 square mile, use the same DPR for 0.1 square mile 1,300 CUBIC YARDS PER SQUARE MILE

4) Calculate the total Debris Production by multiplying the Debris Production Rate, from step 3, by the drainage area, from step 2. Equation 3.3.1 is used for single undeveloped watersheds within a single DPA Zone.
1,556.34 CUBIC YARDS

For a single watershed use Equation 3.3.1:

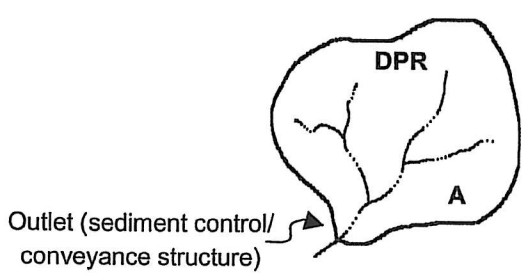


Figure 3.3.1
Debris Production for a Single Watershed

$$DP = DPR_{(A)} \times A$$

Equation 3.3.1

Where: DP = Debris Production in yd^3
DPR = Debris Production Rate in yd^3/mi^2

DRAINAGE AREA 6 - SEDIMENTATION CALCULATION

3.3 SEDIMENT DELIVERY

The following sections show the procedures to determine sediment production from watersheds with different characteristics. Sediment production is used for the selection and sizing of sediment control/conveyance structures. See Example 1 in Appendix D.

Undeveloped Watershed

Use the following procedure to determine sediment production at the outlet of an undeveloped watershed that completely falls within the boundaries of one DPA zone:

1) Identify the DPA zone from the maps in Appendix A. DPA-11

2) Determine the drainage area (A) in square miles. 0.95 SQUARE MILES

3) Determine the Debris Production Rate (DPR) from curves in Appendix B-1, 2, or 3, corresponding to the DPA zone and the drainage area found in steps 1 and 2 above. For areas smaller than 0.1 square mile, use the same DPR for 0.1 square mile 1,300 CUBIC YARDS PER SQUARE MILE

4) Calculate the total Debris Production by multiplying the Debris Production Rate, from step 3, by the drainage area, from step 2. Equation 3.3.1 is used for single undeveloped watersheds within a single DPA Zone.

1,239.27 CUBIC YARDS

For a single watershed use Equation 3.3.1:

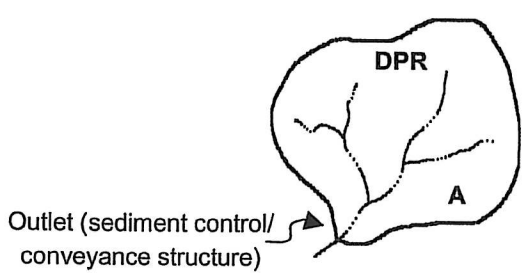


Figure 3.3.1
Debris Production for a Single Watershed

$$DP = DPR_{(A)} \times A$$

Equation 3.3.1

Where: DP = Debris Production in yd^3
DPR = Debris Production Rate in yd^3/mi^2

DRAINAGE AREA 7 - SEDIMENTATION CALCULATION

3.3 SEDIMENT DELIVERY

The following sections show the procedures to determine sediment production from watersheds with different characteristics. Sediment production is used for the selection and sizing of sediment control/conveyance structures. See Example 1 in Appendix D.

Undeveloped Watershed

Use the following procedure to determine sediment production at the outlet of an undeveloped watershed that completely falls within the boundaries of one DPA zone:

1) Identify the DPA zone from the maps in Appendix A. DPA-11

2) Determine the drainage area (A) in square miles. 1.55 SQUARE MILES

3) Determine the Debris Production Rate (DPR) from curves in Appendix B-1, 2, or 3, corresponding to the DPA zone and the drainage area found in steps 1 and 2 above. For areas smaller than 0.1 square mile, use the same DPR for 0.1 square mile 1,300 CUBIC YARDS PER SQUARE MILE

4) Calculate the total Debris Production by multiplying the Debris Production Rate, from step 3, by the drainage area, from step 2. Equation 3.3.1 is used for single undeveloped watersheds within a single DPA Zone.
2,014.80 CUBIC YARDS

For a single watershed use Equation 3.3.1:

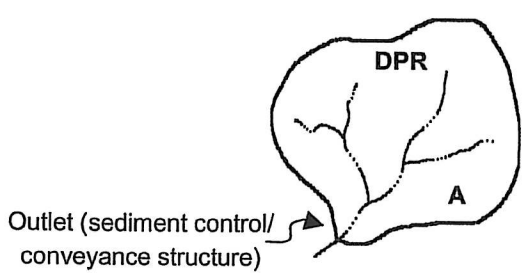


Figure 3.3.1
Debris Production for a Single Watershed

$$DP = DPR_{(A)} \times A$$

Equation 3.3.1

Where: DP = Debris Production in yd^3
DPR = Debris Production Rate in yd^3/mi^2

Table 4.1.1
Debris Control Structures
Based on Debris Production

Total Sediment Production (cubic yards)	Type of Structure	
	DPA zone 1-4 requirement	DPA zone 5-11 requirement
20,000 or greater	Debris Basin	Debris Basin
5,000 to 19,999	Debris Basin	Elevated Inlet
1,000 to 4,999	Debris Basin or Elevated Inlet *	Desilting Inlet
250 to 999	Desilting Inlet *	Inlet with bulked flow drain
less than 250	Inlet* with bulked flow drain	Inlet with bulked flow drain

* The use of elevated or desilting inlets and bulked flow drains in DPA zones 1 through 4 will only be approved by Public Works in special circumstances. The steepness of the watershed, presence of boulders, and higher sediment and mudflow potential in these DPA zones results in a greater risk of plugging the storm drain and damaging the desilting wall.

Figure 4.1.2 shows the Upper Shields Debris Basin used for sediment control.

Figure 4.1.2
Upper Shields Debris Basin
March 3, 1978

Momentum Overflow

In the 1969 and the 1978 storms, some locations experienced unexpected events where significant amounts of sediment overflowed the spillway or dam before the basin was full. This type of event has been referred to as "Momentum Overflow."

It is believed that there are many contributing factors to this phenomenon. Some of the important factors are: rainfall amounts and intensity; watershed size, slope, shape, and condition (burned or unburned); soil composition; Debris Potential Area zone; debris basin shape; total versus cone capacity of the basin; slope of the upstream dam face; and the spillway location.

The likelihood of "Momentum Overflow" is reduced if the following design criteria are met for the sediment retaining facility:

- The cone slope is limited to a maximum of five percent.
- The level capacity is large enough to accommodate at least 50 percent of the debris event.

4.3 STANDARD SEDIMENT CONTROL METHODS

Appendix E includes a table comparing the design criteria for debris basins, elevated inlets, and desilting inlets.

Debris Basin

Public Works' Debris Dams and Basins Design Manual provides the specific design criteria for a debris basin. Appendix D contains a debris basin design example.

The criteria listed below amends the criteria given in Public Works' Debris Dams and Basins Design Manual.

- The horizontal alignment should be located in the original watercourse where the dam is perpendicular to the flow path. The longer dimension of the basin shall fall along the flow line.

- For the design of the outlet tower and conduit, refer to the section on Outlet Works in Public Works' Debris Dams and Basins Design Manual.

- Gage boards are required on basins under State Jurisdiction. Sediment lines need to be painted on the tower, marking from the lowest port invert suffice for all others. See the section on Gage Board Pipe Support in Public Works' Debris Dams and Basins Design Manual.

- The earth embankment slope, upstream and downstream, should be less than or equal to 3H:1V. Steeper slopes require a complete geotechnical stability analysis. Refer to the section on Earthen Dam Design in Public Works' Debris Dams and Basins Design Manual for more information.

- The embankment crest top width of the berm over the inlet shall be 20-feet paved with 3 inches of asphalt concrete. A berm width of 15-feet may be approved if geological analysis is provided to support the reduction.

- The facing slab shall be 6-inch concrete or gunite with No. 5 reinforcing steel at 18-inch spacing each way. See the section on Earthen Dam Design, Protection for Dam Slopes in Public Works' Debris Dams and Basins Design Manual.

- For trash barrier design, refer to the Debris Barrier section in Public Works' Debris Dams and Basins Design Manual.

- For access road and ramp design, refer to the Access to Dam and Basin section in Public Works' Debris Dams and Basins Design Manual. Access roads with 12-foot wide paving (3-inch asphalt concrete on 4-inch crushed aggregate base) within a 15-foot easement with a minimum turning radius of 40 feet can be used for structures with capacity less than 20,000 cubic yards. Access ramps are required. Unpaved ramps require slopes less than 10 percent. Paved ramps (3-inch asphalt concrete on 4-inch crushed aggregate base) require slopes less than or equal to 12 percent.

- For fencing, totally secure the basin area and inlet by 5-foot high fencing per APWA standard drawing 600-0.

- For fencing, structural design, hydraulic design, ponding, freeboard, drain size, inlet design capacity, and sediment capacity, refer to the respective section in Public Works' Debris Dams and Basins Design Manual.

Figure 4.3.1 shows a typical debris basin design.

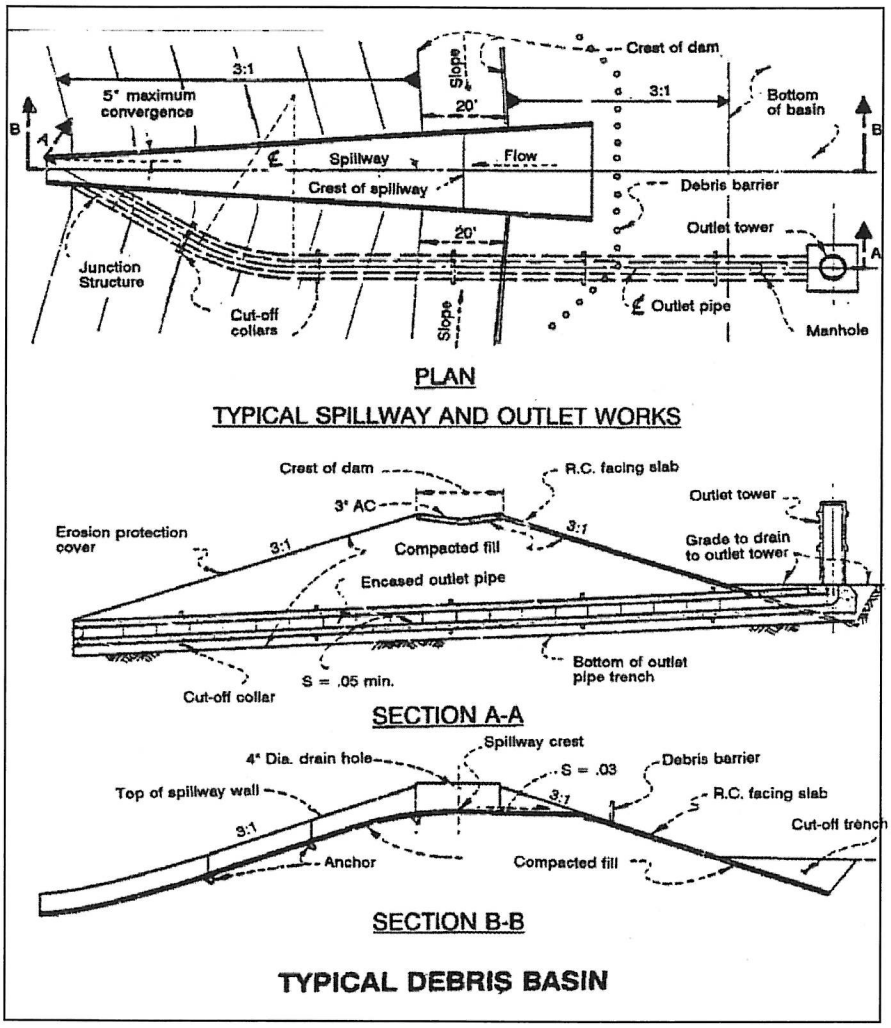


Figure 4.3.1
Typical Debris Basin

Desilting Inlet

Desilting inlets can be used if the conditions comply with the requirements for a desilting inlet indicated below. The design concept for this inlet must be approved by Public Works prior to proceeding to final plans.

The following general criterion supplements the design criteria given in Public Works' Debris Dams and Basins Design Manual.

- The location of an elevated inlet should be on a street or other safe path if available, to convey the water and sediment.

- The horizontal alignment should be located in the original watercourse where the dam is perpendicular to the flow path. The longer dimension of the basin shall fall along the flow line.

- A corrugated metal pipe outlet tower and pipe is required upstream of the desilting wall.

- Gage boards of sediment lines painted on towers, marking from the lowest port invert can be used.

- The earth embankment must be protected between the desilting wall and the inlet with a reinforced concrete facing slab. Air placed concrete is acceptable.

- The embankment crest top width of the berm over the inlet shall be 20-feet paved with 3 inches of asphalt concrete. A berm width of 15-feet may be approved if geological analysis is provided to support the reduction.

- The facing slab shall be 6-inch thick reinforced concrete with reinforcing steel (no wire mesh) extending to the canyon wall. Air placed concrete is acceptable. Provide facing slabs around the basin wall if the cut and fill method is used to obtain the capacity.

- For trash barrier design, a sloping trash rack per LACDPW 3089-0 and trash posts spaced at 2/3 the diameter of the conduit are required.

- For access road and ramp design, refer to the Access to Dam and Basin section in Public Works' Debris Dams and Basins Design Manual. A vehicular access road into the basin must be provided at

least 12-feet wide within a 15-feet easement, paved with 3 inches of asphalt concrete over 4 inches of crushed aggregate base.

- Access ramps are required. Unpaved ramps require slopes less than 10 percent. Paved ramps (3-inch asphalt concrete on 4-inch crushed aggregate base) require slopes less than or equal to 12 percent.

- For fencing, refer to the section on Fencing in Public Works' Debris Dams and Basins Design Manual and totally secure the basin area and inlet by 5-foot high fencing per APWA standard drawing 600-0.

- For hydraulic design, base the design of the inlet and storm drain on requirements stated in Public Works' Hydraulic Design Manual.

- The maximum allowable ponding at the desilting wall shall be 3-feet above the soffit of the drain.

- The minimum freeboard at the inlet is 2-feet above the maximum water surface elevation.

- The minimum drain size is 36-inch RCP and the maximum drain size is 48-inch RCP or an equivalent RC Box.

- Design the spillway notch and the inlet to pass the burned flow rate and the fully developed watershed flow rate, whichever is higher.

- For structural design, refer to the section on Structural Design in Public Works' Debris Dams and Basins Design Manual. Contact Design Division for additional information.

- The maximum allowable capacity of sediment in DPA zones 1-4 is 999 cubic yards and in DPA zones 5-11 is 4,999 cubic yards.

- The maximum desilting wall height is 6-feet.

- Design the desilting wall to withstand the overflow of the total burned and bulked flow rate.

Under certain favorable conditions, watersheds in DPA 5-11 and producing less than 1,000 cubic yards of sediment can be considered for a sediment-carrying conduit. If a desilting inlet cannot meet the requirements, then an elevated inlet or better is required. A typical desilting inlet is shown in Figure 4.3.3.

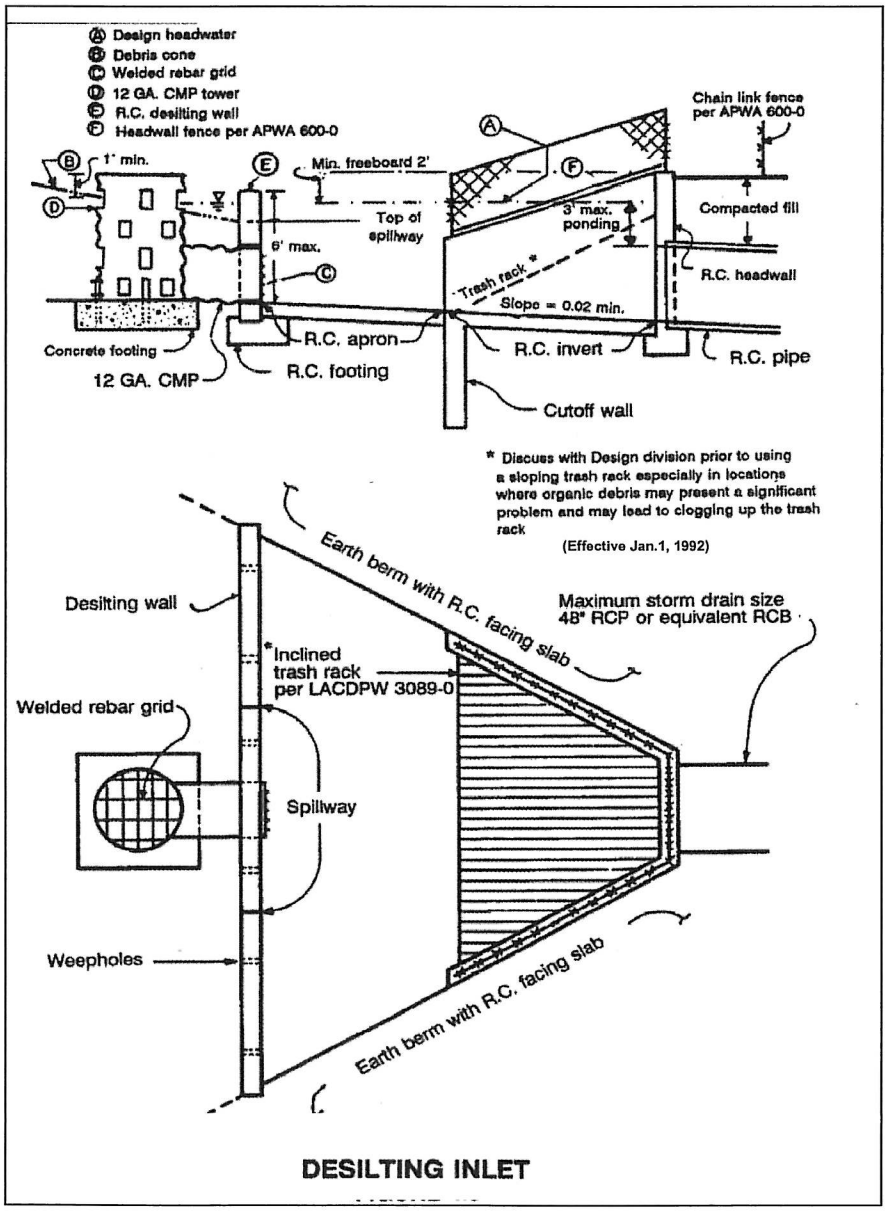
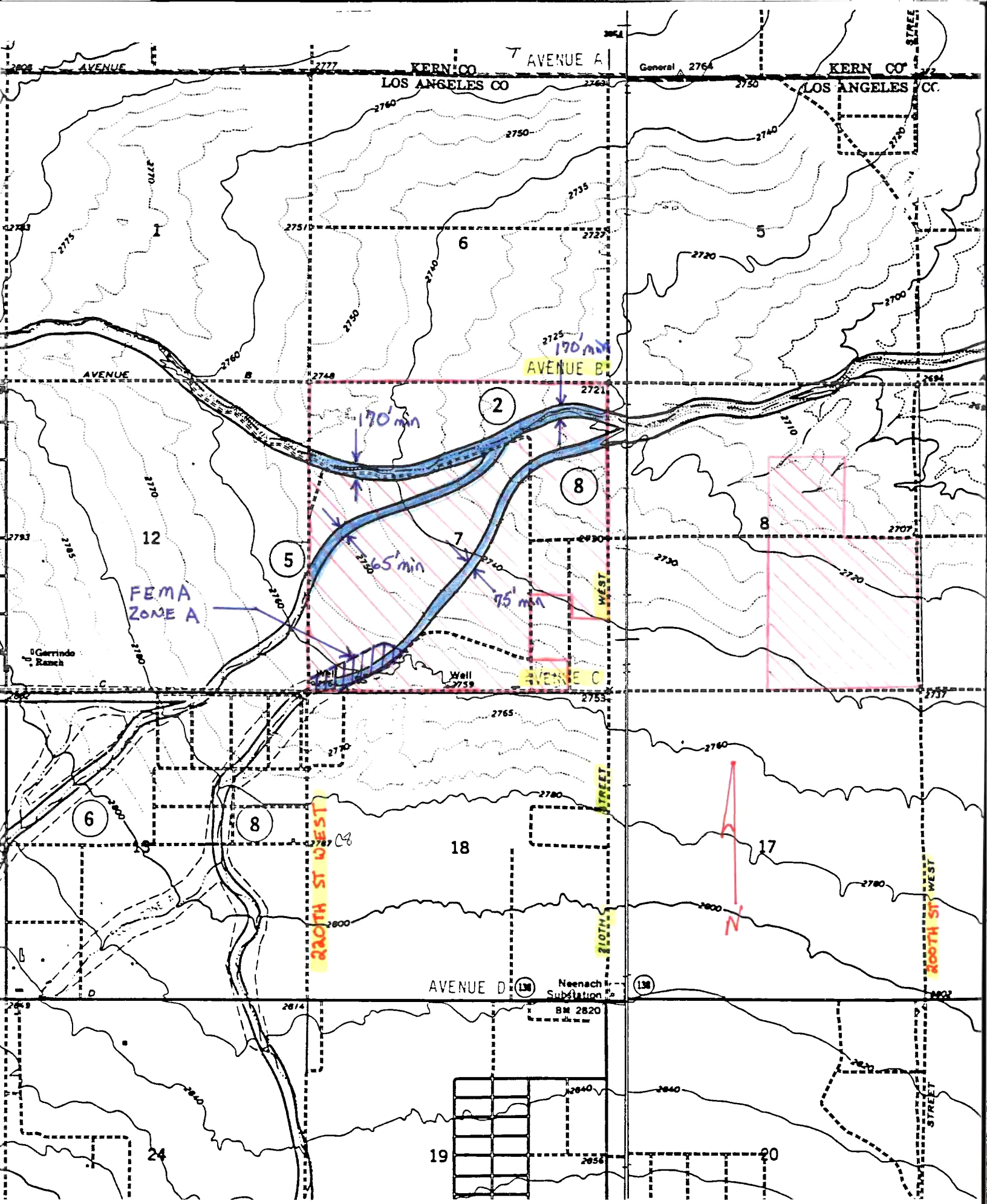


Figure 4.3.3
Desilting Inlet

ATTACHMENT 8

Information Regarding
Antelope Valley Master Drainage Plan


AVENUE A
KERN CO
LOS ANGELES CO
AVENUE B
AVENUE C
AVENUE D
170' min
170' min
65' min
75' min
FEMA
ZONE A
Gerrindo Ranch
Well
220TH ST WEST
210TH STREET
Neenach Substation
BM 2820
N

Jesse Nash

From: JT Stanton
Sent: Thursday, May 20, 2010 8:50 AM
To: Jesse Nash
Subject: FW: NRG Solar project
Attachments: Solar Ave B and 220th St W. Drainage Map.pdf

Have a good day,

J.T. Stanton, P.E.
Vice President of Engineering
234 N. Arrowhead Ave.
San Bernardino, CA 92408-1721
ph (909) 885-3806, Ex. 115
fx (909) 381-1721

From: Sheppard, Christopher [mailto:CSHEPPARD@dpw.lacounty.gov]
Sent: Wednesday, May 19, 2010 5:30 PM
To: JT Stanton
Cc: Ibrahim, Amir
Subject: NRG Solar project

Good afternoon JT,

As I mentioned on the phone this afternoon we looked into the Antelope Valley Master Plan further to determine the requirements for your site. The master plan labels the flow paths within your site as Floodplain Management Paths (FMP). These FMPs do not require that any improvements be constructed or any easements be granted. The only requirement is that flow through the FMP cannot be obstructed. You will still be required to submit a hydrology report for your site that demonstrates that your proposed site layout does not obstruct the flow across your site and that there will be no downstream impacts. I'm also including the drainage exhibit I prepared for your site. If you have any questions please let me know. Thanks.

<<Solar Ave B and 220th St W. Drainage Map.pdf>>

Christopher Sheppard

LA County Department of Public Works

Land Development Division

(626) 458-4921

Please take a moment to let us know how we are doing by going to the link below:

http://dpw.lacounty.gov/go/lddsurvey

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ATTACHMENT 9

CD of Complete Report
(PDF Format)

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Appendix D
Scalmanini Report

Water Requirements and Groundwater Supply
AV Solar Ranch One

PREPARED FOR: Dennis Hunter
Assistant Deputy Director
Los Angeles County Department of Public Works

PREPARED BY: Joseph C. Scalmanini

DATE: June 1, 2010

PROJECT NUMBER: 10-6-071

The AV Solar Ranch One project is proposed to construct, operate and maintain a 230 megawatt solar photovoltaic electrical power generation facility on a total of nearly 2,100 acres (2,093 acres) of land in the western part of the Antelope Valley, about 15 miles west-northwest of Lancaster. In terms of water requirements, the proposed project has an estimated one-time water requirement of about 150 acre-feet per year (afy) during construction, for dust control, construction materials (concrete), domestic use, and drip irrigation of screening vegetation. That short-term use of about 150 afy is estimated to extend over an approximately 38-month construction period. After construction, the ongoing operation and maintenance of the project have been estimated to require about 12 afy: 3 afy on a year-round basis for domestic uses associated with operations and maintenance; and about 9 afy, most of which would be used on two occasions during the year, each for about a month, for washing of solar panels; some of that total would also be used for other small maintenance needs.

This technical memorandum describes groundwater resources in the Antelope Valley, with some focus on the ongoing groundwater adjudication in the court-determined Antelope Valley Area of Adjudication (AVAA), which includes the area of the proposed project. Included in this description are current estimates of the yield of the AVAA, i.e. the amount of groundwater which can be pumped on an annual basis without depleting the resource. Also included are estimates of historical and current groundwater pumping in the AVAA for comparison to its yield. Projected land and water use at the project site are included to provide a context for assessing historical groundwater pumping as well as assessing proposed groundwater pumping relative to sustainable groundwater supply.

The reporting herein derives from work prepared for, and currently being organized into report form for Los Angeles County and the other municipal purveyors in the AVAA. It reflects the opinions intended to be offered in the AVAA court proceedings on basin yield and overdraft, which are scheduled to begin in late September, 2010. However, while this memo attempts to place that work in an appropriate context, notably with regard to the ongoing debate over the yield and status of the basin (AVAA), it cannot conclusively report on an adjudicated

groundwater yield or allocation of groundwater rights. That said, it attempts to illustrate how the long-term dedication of the project site to a land use that has a comparatively very small water requirement, particularly on a unitized per-acre basis for a substantial area, should fit in the realm of ultimate groundwater use at an overall sustainable rate in the AVAA.

Antelope Valley Area of Adjudication

The Antelope Valley is located in the southwest portion of the Mojave Desert in southern California, about 40 miles north of the city of Los Angeles. Approximately two-thirds of the Valley area is located in northern Los Angeles County and the remainder is located in adjacent southeastern Kern County. The Valley is bounded on the south and west by the San Gabriel and Tehachapi Mountains, respectively; on the north by the Rosamond and Bissell Hills; and on the east by the buttes and alluvial fans of the Hi Vista area. Adjacent to the Antelope Valley are the Fremont Valley to the north and the Victor Valley to the east.

The Antelope Valley is a closed basin, approximately 1,390 square miles in area, comprised of relatively flat valley land and dry lake beds, with coalescing alluvial fans and scattered buttes around the periphery. Surface elevations in the Valley range from about 2,300 feet to nearly 3,500 feet above mean sea level (MSL). Several creeks, most notably perennial Big Rock and Little Rock Creeks, drain the surrounding mountains, cross the alluvial fans, and typically become dry washes. The Los Angeles Aqueduct traverses the western end of the Valley and the California Aqueduct runs along the Valley's southern edge, flanking the San Gabriel Mountains.

Urban centers in the Antelope Valley include the cities of Lancaster, Palmdale, and Rosamond along State Highway 14, as well as a large portion of Edwards Air Force Base (Edwards AFB) in the Valley's northeast corner. The population in the Palmdale/Lancaster urbanized area has increased rapidly since the 1980's and is currently around 280,000. Agricultural lands occupy various parts of the area near the cities and Edwards AFB, historically exceeding 60,000 acres and currently comprising approximately 25,000 acres.

At the completion of Phase 1 of the overall Antelope Valley Groundwater Cases, the Court concluded in its Order dated November 3, 2006 that the alluvial basin as described in California Department of Water Resources Bulletin 118-2003 should be the basic jurisdictional boundary for purposes of the litigation. The Area of Adjudication for the Antelope Valley Groundwater Adjudication is illustrated in Figure 1, which also shows the location of the proposed AV Solar Ranch in the AVAA.

Land Uses, Water Requirements and Water Supplies

Land Uses - There are generally four land uses with which water requirements can be associated in the AVAA: agricultural, municipal and industrial (M&I, including mutual water companies and military), rural residential, and environmental/open space (artificial lakes). Beginning with

about 5,000 acres of alfalfa and orchards around 1910, agriculture expanded into areas where farming continues to be practiced today. Total land in agricultural production progressively increased, except for a decline through the Great Depression, to about 55,000 acres by 1950. For most of the next 30 years, some 55,000 to 60,000 acres remained in agricultural production, dominated by alfalfa but with stable acreages of truck, field, and deciduous (orchard) crops and a noteworthy increase in grain crops. From the mid to late-1970's through the 1980's, agricultural land use significantly declined, to about 12,000 acres by 1990-91. Through the decade of the 1990's, agricultural land use progressively increased, by more than double, to about 28,000 acres; since 2000, agricultural land use has slightly declined to its current level of about 25,000 acres. The period of recent increase and general stability in agricultural land use has been marked by somewhat constant alfalfa farming but significantly increased truck cropping.

Since the 1940's, when the town of Lancaster was the largest and essentially only urban center, with a reported population of less than 4,000 people, the total population and extent of urban development in the Valley have continually grown. From 1950 to 1970, the Valley's population is reported to have grown from around 3,600 to over 70,000. In 1970, the City of Palmdale and towns like Quartz Hill, Rosamond, and Littlerock were still quite small, and it wasn't until the late 1980s that a marked increase in total population occurred, specifically from about 85,000 in 1980 to over 206,000 in 1990. Further, the population in the City of Palmdale had grown sufficiently to approach that of Lancaster and, by the year 2000, the two cities each had a population of about 125,000. Presently, the AVAA has a total population of over 300,000 with Lancaster and Palmdale having by far the greatest populations of any urban center in the AVAA (about 135,000 each). In contrast, Quartz Hill, Rosamond, Littlerock, and North Edwards, the developments of Desert View Highlands and Lake Los Angeles, as well as the Edwards AFB, each has a population of about 15,000 or less.

The combined populations of the mutual and private water companies in the AVAA are estimated to be around 12,000. While there is no readily available record of rural residential population in the AVAA, available data from Los Angeles and Kern Counties indicate that slightly more than 7,000 improved parcels are located throughout the AVAA, outside the service areas of municipal water purveyors or smaller mutual or other private water companies.

Two environmental/open space areas in the AVAA are recognized as having water requirements separate from those associated with M&I or agricultural land use, specifically the Paiute Ponds wetlands and Apollo Lakes Park impoundments. The Paiute Ponds were originally created in 1961 with the construction of a dike across Amargosa Creek to prevent its overflow into Rosamond Dry Lake. Currently, the Paiute Ponds wetlands occupy an area of 400 acres, and consist of five main ponds and an extensive marshland area. Within the wetlands, a minimum of 200 acres is to be maintained as marsh-type habitat according to a three-party Letter of Agreement between the LACSD14, the California Dept. of Fish and Game, and Edwards AFB. The ponds include a series of impoundments occupying an additional 90 acres for duck hunting built by Ducks Unlimited and Edwards AFB in 1991.

The recreational impoundments at the Apollo Lakes Park occupy a collective area of about 40 acres, and they first received deliveries of recycled (currently tertiary-treated) water from the Lancaster WRP in 1972.

Water Requirements - Total historical water requirements in the AVAA, consisting of agricultural, M&I, and environmental water uses, are illustrated in Figure 2. The total water requirements have varied greatly throughout the historical period, primarily affected by agricultural water use. During the period of agricultural expansion through 1950, the AVAA experienced the greatest increase in water requirements from early development to nearly 360,000 afy. Agricultural water demand comprised the vast majority of the total requirements through that period, increasing to nearly 350,000 afy by 1950; at that time, M&I use was about 10,000 afy. During the period of peak agricultural activity through the early 1970s, total water requirements remained high, between about 300,000 and 370,000 afy. Through that period, agricultural water use was slightly declining, and M&I water requirements were gradually increasing, from about 10,000 to 30,000 afy.

With the subsequent significant decline in agricultural activity through the early 1990s, total water requirements substantially decreased, from approximately 300,000 to about 150,000 afy, primarily as a result of the substantial decline in agricultural water demand from about 260,000 afy to about 70,000 afy. During the latter half of that period of agricultural decline, M&I water requirements increased from about 30,000 afy to about the same as the agricultural water demand, about 70,000 afy, by 1990. Both agricultural and M&I water requirements increased at comparable rates throughout the 1990s. By 2000, total water requirements, by then including a small amount for environmental uses, had increased to approximately 255,000 afy. Since 2000, total water demand has remained generally stable, a result of a generally offsetting increase in M&I water use and decrease in agricultural water use. By 2006, the agricultural water demand was about 114,000 af; total M&I water requirements were about 118,000 af (105,000 af for all uses by the main purveyors and about 13,000 af of municipal-type use by mutual, small private and rural residential users); and environmental water use was about 9,600 af to maintain wetlands and recreational lakes.

Water Supplies - Prior to 1972, essentially all water requirements in the AVAA were met by local groundwater, augmented by a small amount of local surface water, generally less than 3,000 afy, diverted from Littlerock Creek. Beginning in 1972, supplemental water has been imported into the AVAA from the State Water Project (SWP) to augment the local water supplies. Water is imported from the SWP by three State Water Contractors in the AVAA, specifically AVEK, PWD, and LCID; their collective SWP Table A amounts are 165,000 acre-feet per year (although that total amount is not available in all years, nor is it all dedicated to the AVAA). Imported SWP water was first made available for treatment and municipal use by Littlerock Creek Irrigation District in 1972; SWP water was initially imported by AVEK in 1976 for agricultural water supply to augment local groundwater production.

Littlerock Creek diversions have been stable since 1946, typically providing a total of 1,000 to 3,000 afy of local surface water toward agricultural and M&I water supplies. There have been only a few years, in the 1960s and in 2002, when water was not available for diversion. Beginning in the mid-1990s, coincident with the dam rehabilitation project (during which time the dam was also raised 12 feet, increasing the reservoir's capacity), total diversions have typically exceeded 3,000 afy and in some years have approached 7,000 afy, all toward M&I water supplies.

Beginning in 1976, about 27,000 af of SWP water were delivered for agricultural irrigation supplies by AVEK. Imported SWP water for irrigation notably increased into the early 1980's, reaching a peak of nearly 64,000 af in 1981. Since then, deliveries of SWP water for agricultural irrigation have been notably smaller, approaching 40,000 af in only one year (1982) and less than 30,000 af in all other years. Over the decade through 2006, deliveries of SWP water for agricultural use ranged between approximately 7,000 and 28,000 afy and averaged about 15,000 afy. They increased to nearly 18,000 af in 2007, and then substantially declined to near 3,500 af in 2008.

SWP deliveries for municipal water supply nearly linearly increased since the early 1980's, to about 70,000 afy in 2006 and 2007, followed by decreased delivery of about 52,000 af in 2008. Combined SWP deliveries for agricultural and municipal water supply reached a peak of nearly 90,000 af in 2007, but declined to about 55,000 af in 2008 (Figure 3).

Overall, groundwater pumping to meet both agricultural and M&I water requirements in the AVAA has ranged from as much as 370,000 to 380,000 afy in the 1950's-1960's to slightly less than 90,000 afy by 1990. Since then, total groundwater pumping has increased, as high as about 175,000 afy by 2002, followed by a decline to nearly 150,000 af in 2005, and to slightly less than 135,000 af in 2006 and 2007, followed by an increase to about 160,000 af in 2008 (Figure 4).

Recycled water from both LACSD14 (Lancaster) and LACSD20 (Palmdale) water reclamation plants has been utilized for agricultural irrigation and environmental water use in the AVAA since at least the early 1990s. Use of recycled water for irrigation and environmental water supply has steadily increased over recent time, from approximately 1,100 and 3,800 afy for irrigation and environmental uses, respectively, in 1988, to about 11,800 and 9,600 afy, respectively, in 2006. Total recycled water use for irrigation and environmental supplies in the AVAA is now about 20,000 afy (Figure 5).

Sustainable Groundwater Yield

The sustainable yield of a groundwater basin is considered to be the amount of pumping that, for given land use conditions, produces return flows which, in combination with other recharge, result in no long-term depletion of groundwater storage. Based on a combination of estimated natural recharge to the groundwater basin, utilization of supplemental water and its contribution to groundwater recharge, and land use practices in the AVAA that utilize water in different ways

and thus contribute different amounts of return flows as contributions to groundwater recharge, estimates of sustainable (production) yield have been made for both "native" and "supplemental" conditions. Under native conditions, return flows derive from the use of local groundwater only; those return flows are the only source of recharge other than natural recharge that derives from local precipitation and runoff within the watershed surrounding the AVAA. Under supplemental conditions, return flows derive from the use of both local groundwater and supplemental water; those return flows add to other sources of recharge that include natural recharge, again from local precipitation and runoff within the watershed surrounding the AVAA, plus any purposeful recharge of supplemental water.

Since agricultural and municipal-type land uses contribute different return flow fractions that, in turn, contribute to the sustainable yield of the groundwater basin, sustainable yield is not necessarily a constant and can thus be a variable that is dependent on prevailing land use in the basin. To capture the variations in the preceding factors, which are commonly described as part of cultural conditions in a given basin, two sets of sustainable yields were prepared for the AVAA: one set for different mixes of land use under "native" conditions, where only natural recharge is the primary source of sustainable groundwater supply in the basin; and a second set, also for different mixes of land use but under "supplemental" conditions, where natural recharge is augmented by recharge from the use of supplemental water supplies such as has occurred with the importation of SWP water since the 1970's.

Throughout the periods considered for estimating sustainable yield of the AVAA, the respective proportions of agricultural and municipal-type land uses have been comparable, with both increasing in the late 1990's, followed by some agricultural decline in the 2000's and general stability in municipal-type land use over that same time. Under "native" conditions, largely independent of variations in prevailing land uses since the mid-1990's, the native sustainable yield of the AVAA is about 82,300 afy. In addition to that, however, for the five-year period prior to the filing of the current adjudication, average use of supplemental water was nearly 68,000 afy. Its use augmented natural recharge sufficiently to support total sustainable groundwater yield of nearly 108,000 afy. Since then, use of supplemental water increased, to an average of about 73,000 afy over the 1996-2005 period, and to 73,500 af in 2005; those uses augmented natural recharge to support increases in total sustainable yield to about 110,000 afy. While "rights" to all the total sustainable yield are not equally distributable to all interests in the AVAA, in part because separate priorities attach to the increases attributable to supplemental water use, both the "native " sustainable yield of 82,300 afy and the total sustainable yield of 110,000 afy are used in this technical memorandum in order to place the water requirements of the proposed AV Solar Ranch project in a quantitative context.

Project Water Supply

The proposed project would use groundwater to meet the estimated water requirements described above, about 150 afy through a 38-month construction period, followed by about 12 afy on an ongoing basis for a combination of domestic and maintenance purposes. On a unitized basis,

those equate to about 0.07 af per acre per year during construction, and less than 0.01 af per acre per year during operations (0.006 af/a/yr). Compared to existing land uses described above, where unit water requirements for both agricultural and municipal land uses are within an overall range of about three to nearly seven af per acre per year, the water requirements on the nearly 2,100 acres proposed project are exceptionally small.

The sustainable yield values described above can conservatively be reported to be the smallest values that have been publicly represented by any of the parties to the ongoing Antelope Valley Adjudication. Thus, while this technical memorandum cannot report what the court might determine with regard to the yield of the AVAA, it is logical that it will not find the total sustainable yield to be any smaller than about 110,000 afy, and not find the native sustainable yield to be any smaller than about 82,300 afy.

Further, as introduced above, this technical memorandum cannot report on any allocation of groundwater rights that might follow a determination of groundwater basin yield; such an allocation is not yet scheduled for hearing by the court, which is currently only scheduled to establish yield and determine overdraft beginning in late September 2010. However, it is logical that the total sustainable yield will be allocated first to attribute a portion to the importers who are responsible for the importation of supplemental water that results in the associated increase in total groundwater yield; the remainder of total sustainable yield, or “native” yield, will then most logically be allocated in such a way that, in aggregate based on an average unitized pumping allocation, total pumping will not exceed sustainable yield. At the size of the AVAA, 1,390 square miles or about 890,000 acres, native sustainable yield equates to nearly 0.1 af per acre per year. If the court were to unilaterally allocate total sustainable yield without regard to attribution for importation of supplemental water, the unitized total sustainable yield would be about 0.125 af per acre per year.

Traditional agricultural and municipal land uses in the Antelope Valley cannot subsist on small water allocations such as 0.1 to 0.125 af/a/yr, so the ultimate allocations of sustainable yield are most likely to be into pooled amounts where higher unitized water requirements, e.g. 3 to 7 af/a/yr for typical existing land uses, could be satisfied, but at the expense of other lands which could then not pump groundwater at those rates (without special provisions such as providing “replacement” water from a supplemental source). The proposed AV Solar Ranch project is a notable exception to traditional land uses in the Antelope Valley in that it represents a locally large area within the overall AVAA, but with associated water requirements which fall well below a conservative allocation of AVAA groundwater yield. Consequently, its water use can be considered to be, without special provisions, consistent with sustainable use of groundwater at the scale of the entire AVAA; strictly interpreted, its water use would be as much as an order of magnitude less than, i.e. well within, a unitized allocation of sustainable groundwater use on the overall 2,100 acre project site.

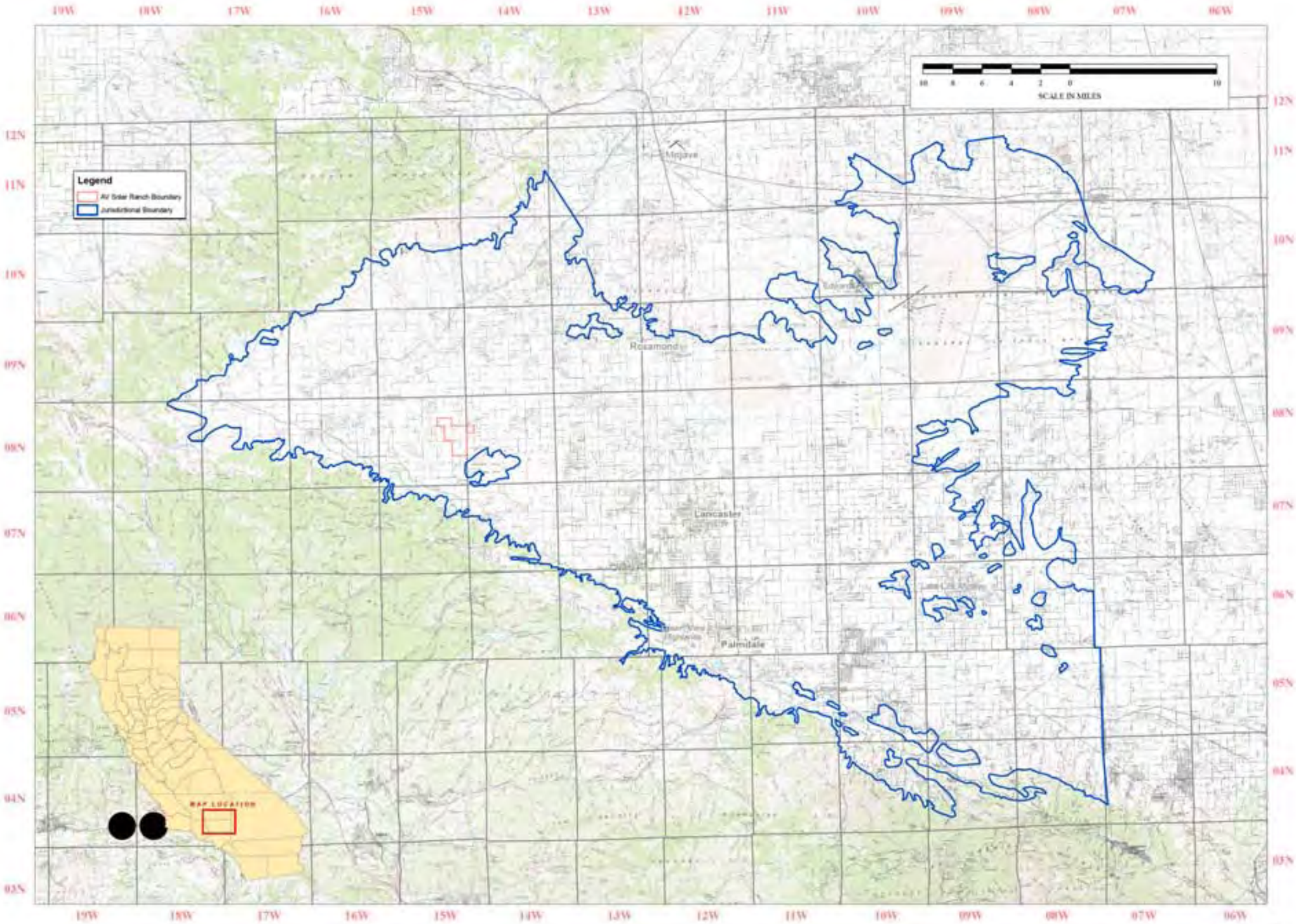


Figure 1
Locations - AV Solar Ranch Project and Antelope Valley Area Adjudication

Figure 2
Estimated Historical Total Water Requirements

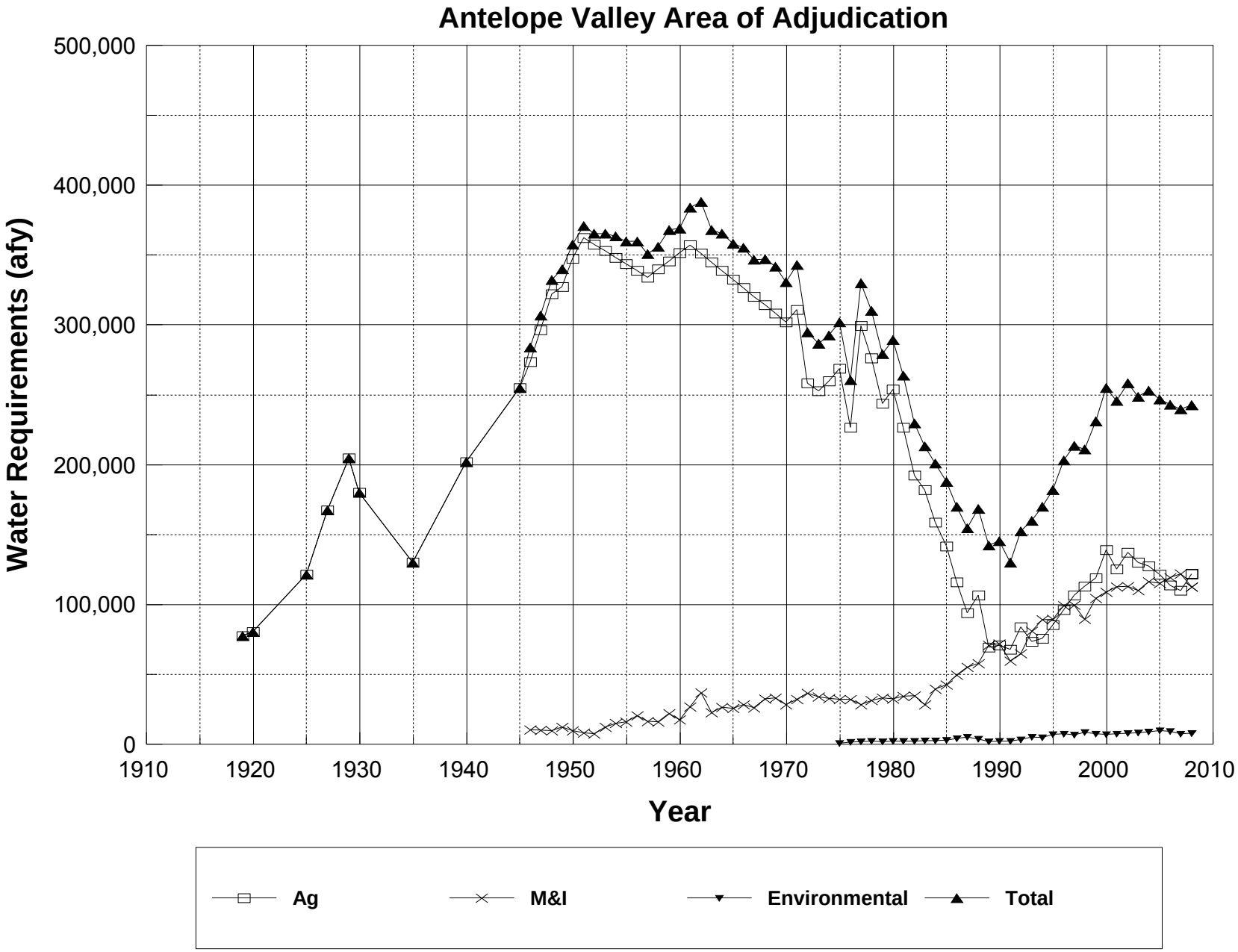


Figure 3
Historical Supplemental Surface Water by Source

Antelope Valley Area of Adjudication

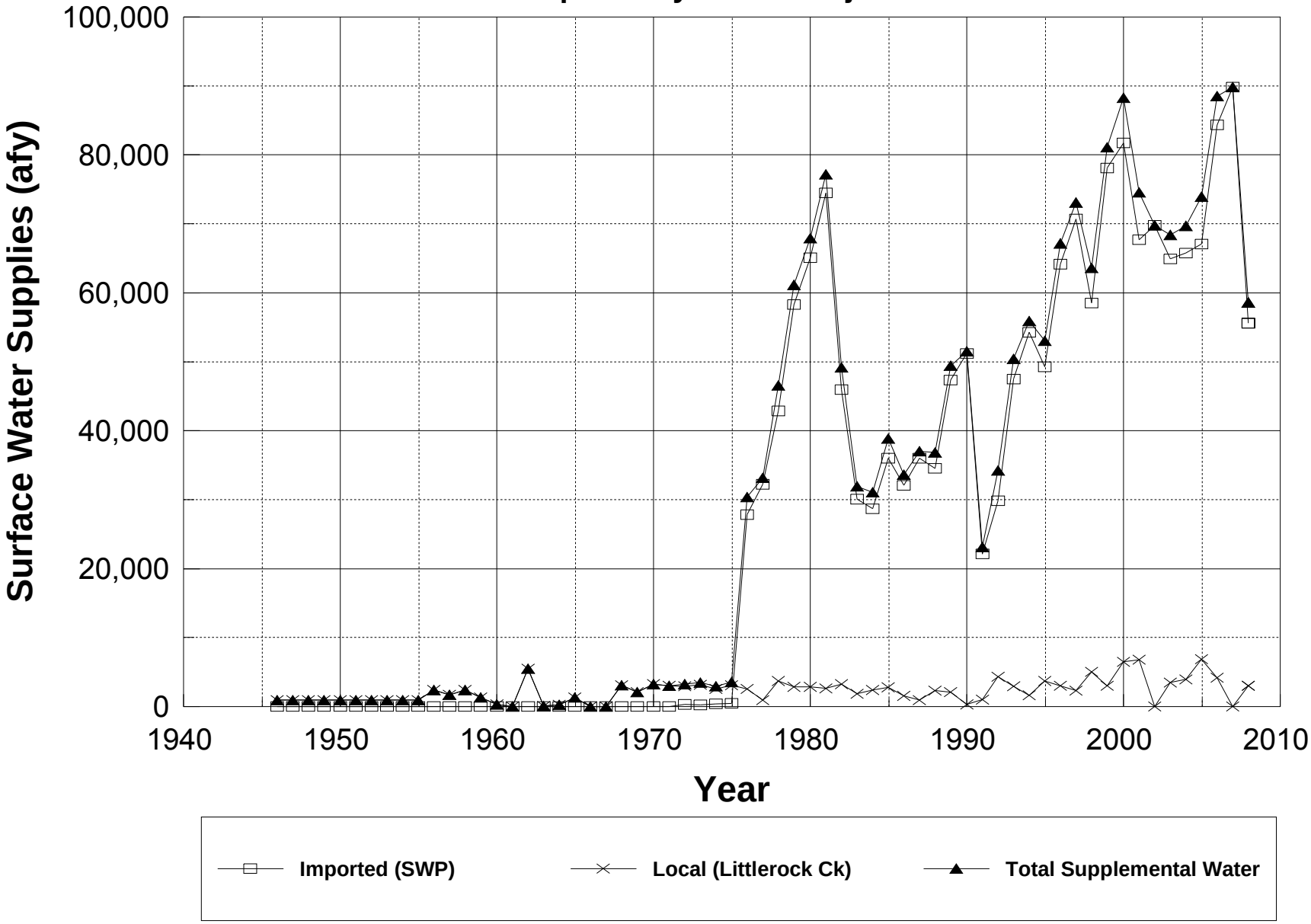


Figure 4
Estimated Historical Groundwater Pumping
Antelope Valley Area of Adjudication

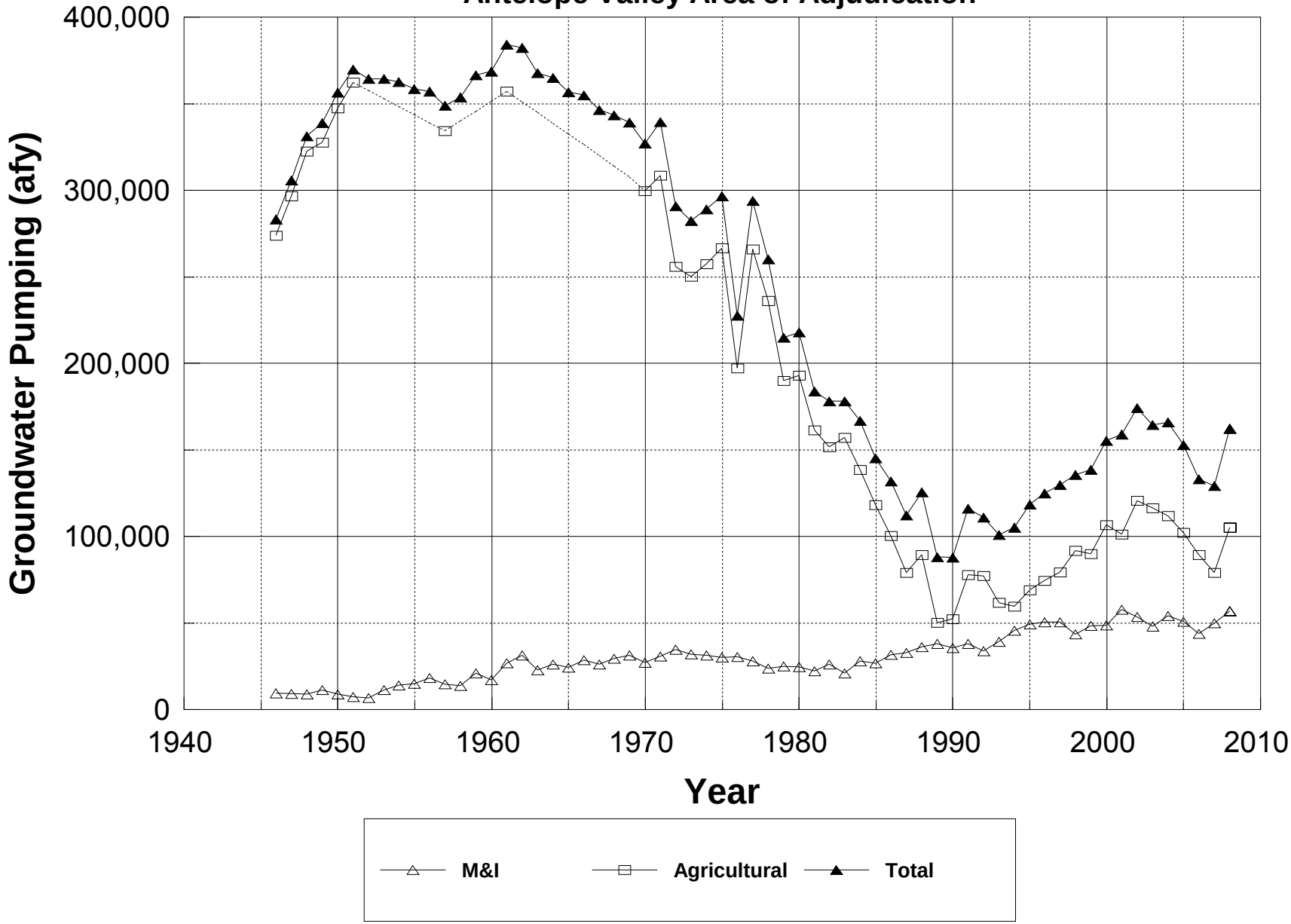
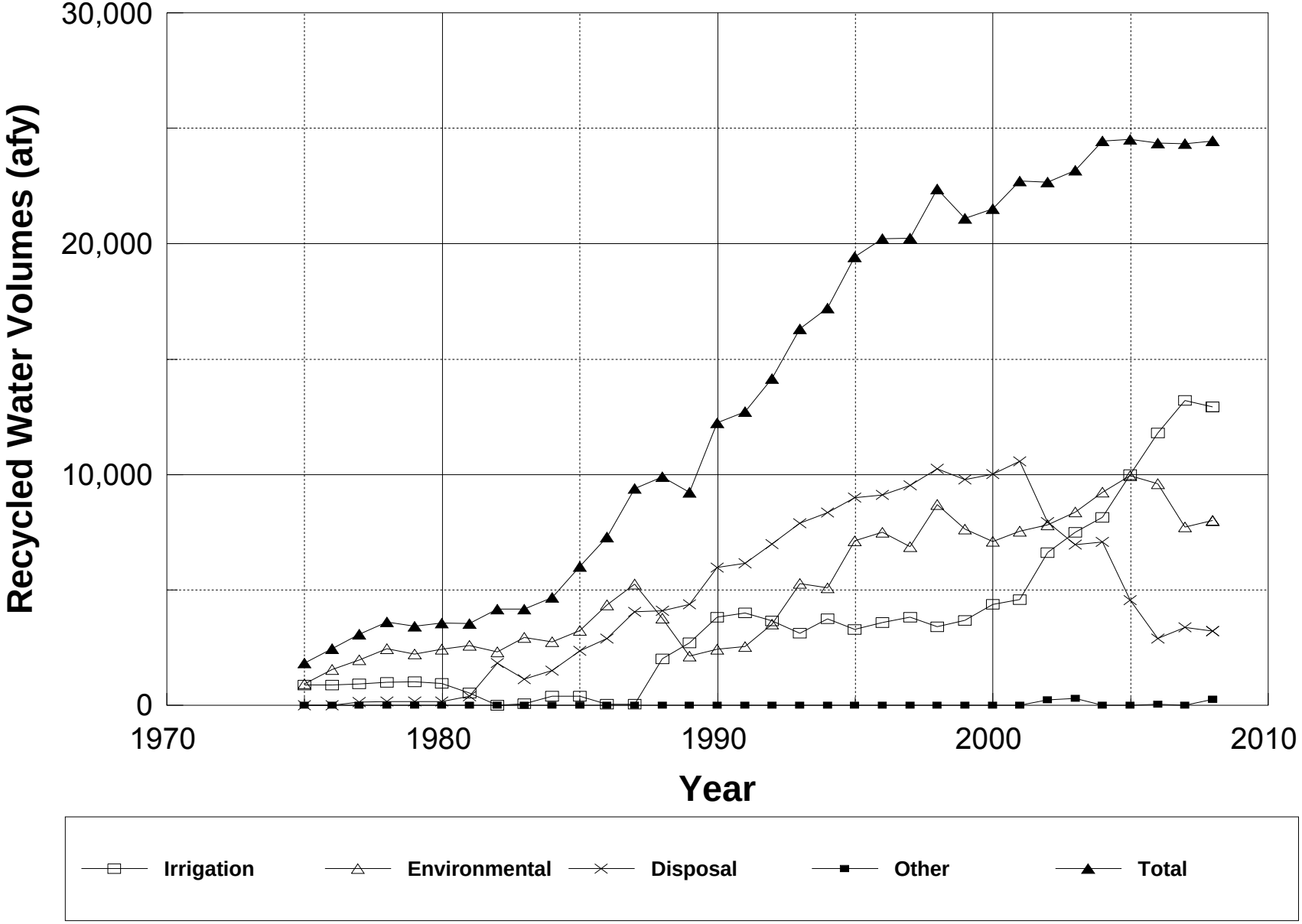


Figure 5
Recycled Water Supply

Antelope Valley Area of Adjudication



Appendix E
Water Well Information

U.S. WATER SERVICES
Registered to ISO 9001:2000

Laboratory Analysis Report

Company Name: Esolar Lancaster,CA **Sample Date: 09/12/08**
Sample: 08N1SW08L001S **Laboratory Number: 412848941**

Water Analysis

ANALYSIS	RESULT	UNITS
pH	7.88	units
Conductivity	430	umhos/cm
Total Organic Carbon	<1.0	mg/L
P-Alkalinity (CaCO3)	0	mg/L
M-Alkalinity (CaCO3)	160	mg/L
Bromide	<0.5	mg/L
Chloride	14.7	mg/L
Fluoride	<0.4	mg/L
Nitrate (NO3)	20.2	mg/L
Nitrite (NO2)	<0.5	mg/L
Total Phosphate	<1.0	mg/L
Ortho-Phosphate	<0.4	mg/L
TDS	229	mg/L

U.S. WATER SERVICES
Registered to ISO 9001:2000

Laboratory Analysis Report

Company Name: Esolar Lancaster,CA **Sample Date: 09/12/08**
Sample: 08N1SW08L001S **Laboratory Number: 412848941**

Water Analysis

ANALYSIS	Total	Dissolved	UNITS
Sulfur (SO4)	35.5	35.3	mg/L
Hardness (CaCO3)	93.8	95.8	mg/L
Calcium Hardness (CaCO3)	72.3	74.6	mg/L
Magnesium Hardness (CaCO3)	21.5	21.2	mg/L
Aluminum	<0.05	<0.05	mg/L
Arsenic	0.031	0.029	mg/L
Barium	0.025	0.025	mg/L
Beryllium	<0.01	<0.01	mg/L
Boron	0.199	0.205	mg/L
Cadmium	<0.01	<0.01	mg/L
Chromium	<0.01	<0.01	mg/L
Cobalt	<0.01	<0.01	mg/L
Copper	<0.01	<0.01	mg/L
Iron	<0.01	<0.01	mg/L
Lead	<0.01	<0.01	mg/L
Manganese	<0.005	<0.005	mg/L
Molybdenum	<0.01	<0.01	mg/L
Nickel	<0.01	<0.01	mg/L
Potassium	3.45	3.56	mg/L
Selenium	0.023	0.017	mg/L
Silica	27.9	28.2	mg/L
Sodium	46.7	54.6	mg/L
Strontium	0.231	0.228	mg/L
Thallium	<0.05	<0.05	mg/L
Tin	0.021	0.021	mg/L
Titanium	<0.01	<0.01	mg/L
Vanadium	0.014	0.013	mg/L
Zinc	<0.01	<0.01	mg/L

mg/L means milligrams per liter which is equivalent to parts per million (ppm)

Sincerely,
Nicole Johnson
Analytical Support

330 South Cleveland Street
Cambridge, MN 55008
1-866-663-7632
www.uswaterservices.com

ISO 9001 DNV DNV Certification, Inc. REGISTERED FIRM

U.S. WATER SERVICES
Registered to ISO 9001:2000

Laboratory Analysis Report

A special note for test-wells, irrigation wells and wells of similar aquifers and geology of the actual wells:

Water quality from test wells, wells near the general area, and aquifers of same or similar depth may or may not be representative of a fully developed well at full flow. The purpose of the Well Water Test Kit is to analyze samples of water to determine the possible contaminants and water quality of a given well. Often times test wells are pumped at much lower flow rates than a fully operational well. As a result, various minerals will test at lower levels than they would in a fully developed well. Shallow wells of less than 100 feet may also be susceptible to surface water intrusion and frequent water quality changes.

The results of the test should be used to evaluate possible technologies and potential problems with system operations and discharge. However, the results should not be considered an absolute guarantee of what the final well water quality will be. During sampling the closer the well is pumped to actual operating flow conditions the better it will represent production well water quality. Inaccurate water sampling or water quality data could lead to inaccurate design of the water pretreatment systems. Furthermore, these tests do not include testing for numerous contaminants such as sand, which may be pulled from the well. Normally these tests depend on flow velocities, actual construction/design of the well, and local geology.

It is recommended that a Rossum Sand Index be performed during test pumping of the production well to determine the well production quality. High-suspended solids, such as sand, may cause operations problems with some of the water operating equipment such as Reverse Osmosis systems. These conditions may not become evident until the well has been operational under normal flow rates for extended periods of time. This may require additional water treatment equipment to remove these contaminants.

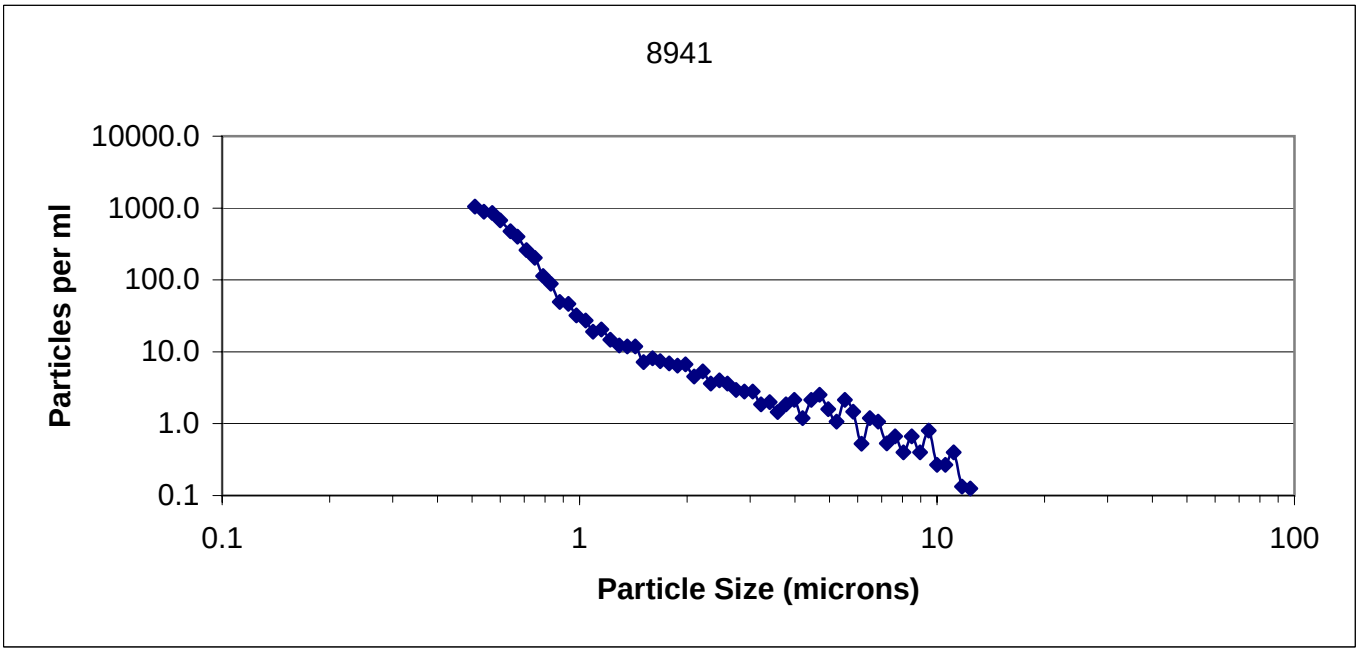
This well water test kit will test many of the most common contaminants. It does not test every possible contaminant and potential hazard. An evaluation of the water quality available in the area by a qualified well driller and geologist is highly recommended. The actual water source and water quality is of the utmost importance for the proposed plant construction. Care should be given in developing the highest quality water source.

A special note to surface water samples such as rivers and lakes:
Many lakes and rivers water quality change considerably during the course of the year. Temperature, precipitation, change in seasons, wind blown contaminants and other outside factors may change the water quality month to month or even day to day. It is highly likely that a surface water analysis may not be representative of the actual or normal water quality. Further, this test will give no indications of the extremes that may occur with the water quality.

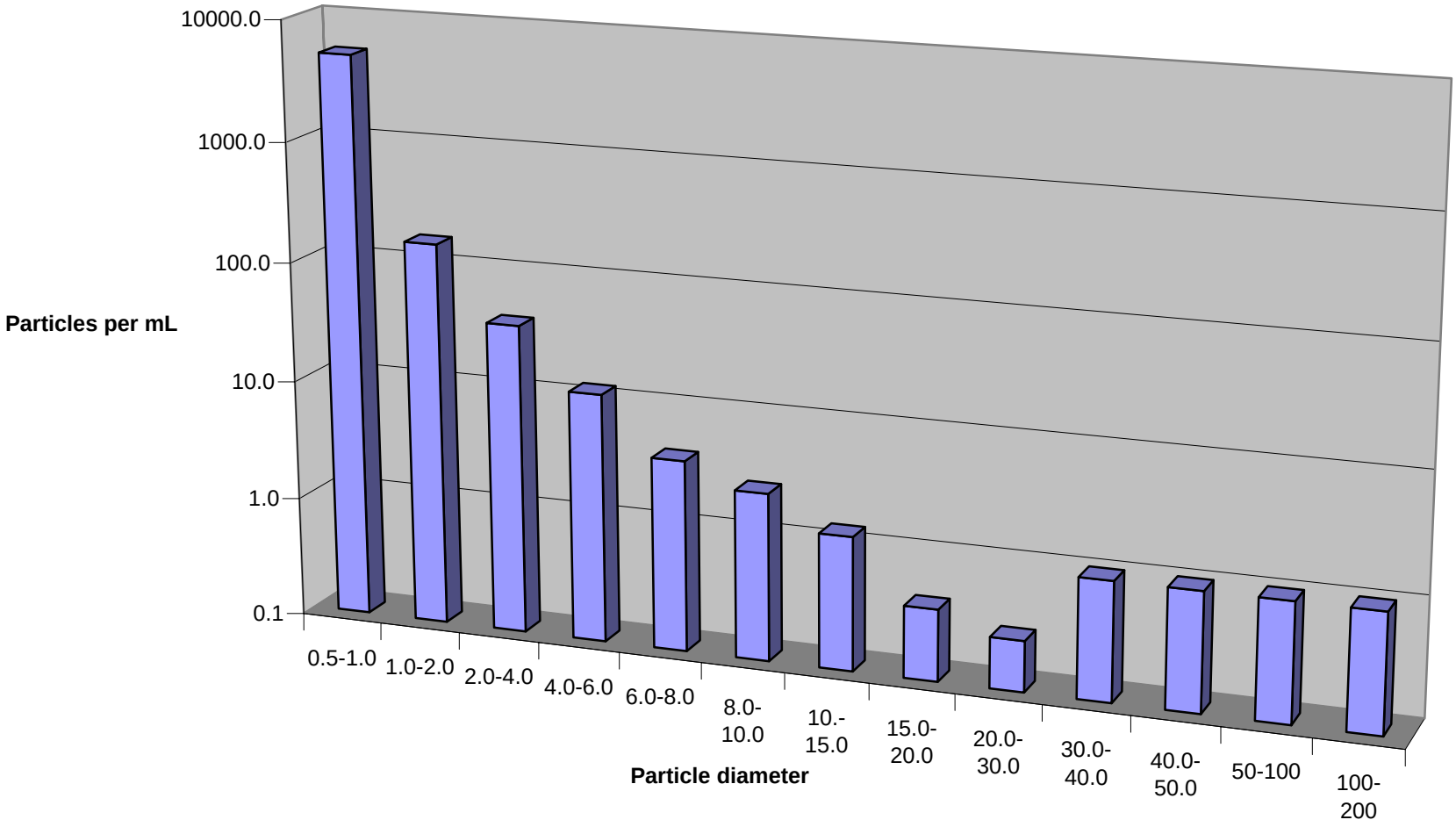
Particle Size Analysis

Company Name: Esolar-Lancaster, CA
Sample: 08N1SW08L001S
Sample Date: 09/12/08
Laboratory Number: 10088941

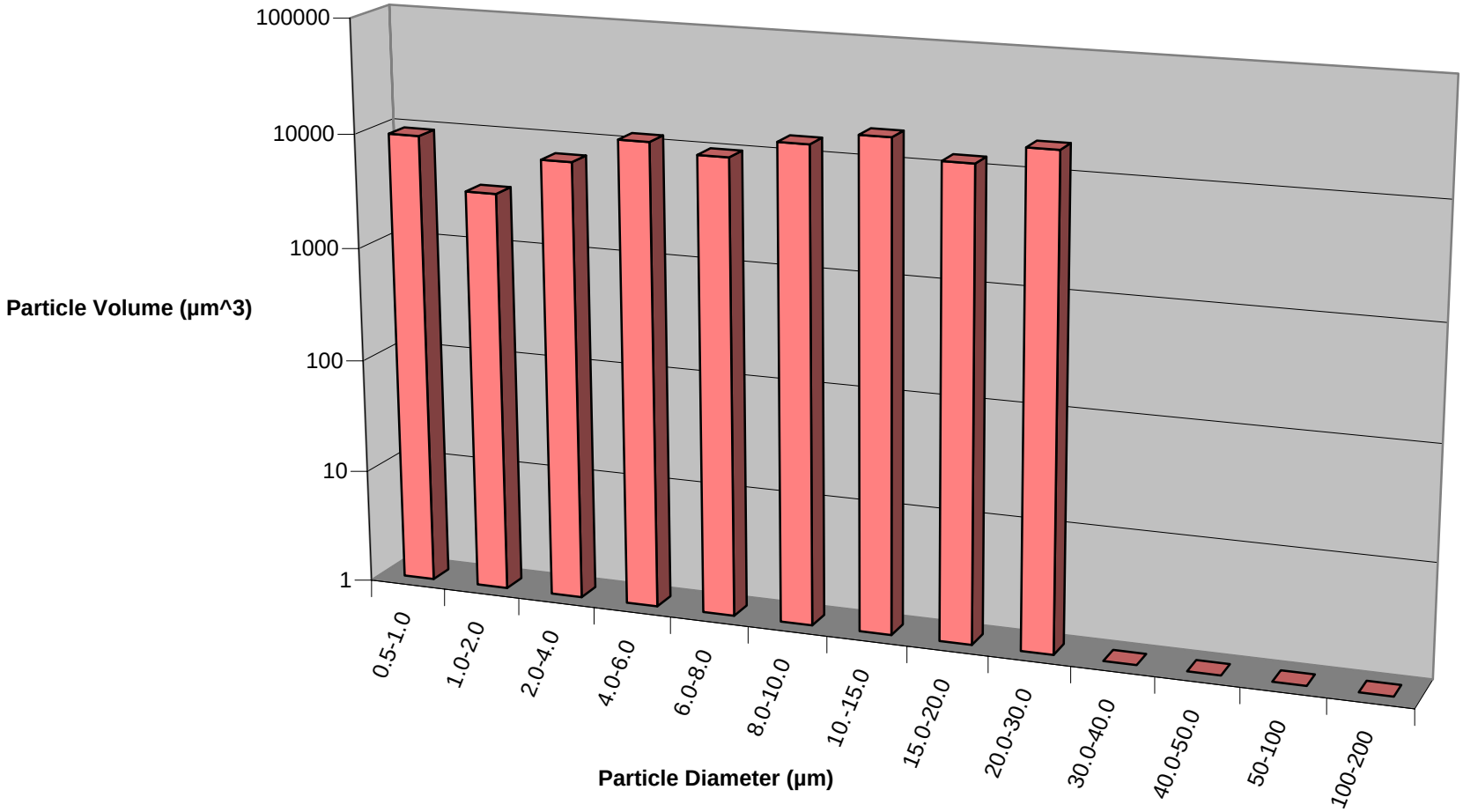
Particle Size (microns)	Particles per mL	% of Total Particles	Volume ppm	% of Total Volume	Particle Volume
0.5-1.0	5131.1	95.9%	0.0006	8.83%	9513.723367
1.0-2.0	160.3	3.0%	0.0002	3.14%	3368.545118
2.0-4.0	38.9	0.7%	0.0005	6.68%	7175.07549
4.0-6.0	12.1	0.2%	0.0008	11.17%	12025.86362
6.0-8.0	4.0	0.1%	0.0007	9.39%	10030.50253
8.0-10.0	2.5	0.0%	0.0010	13.48%	14546.07971
10.-15.0	1.3	0.0%	0.0013	18.18%	18743.288
15.0-20.0	0.4	0.0%	0.0009	11.85%	12787.69693
20.0-30.0	0.3	0.0%	0.0012	17.30%	18671.47081
30.0-40.0	0.0	0.0%	0.0000	0.00%	0
40.0-50.0	0.0	0.0%	0.0000	0.00%	0
50-100	0.0	0.0%	0.0000	0.00%	0
100-200	0.0	0.0%	0.0000	0.00%	0
Total	5351.0	100%	0.0072	100%	



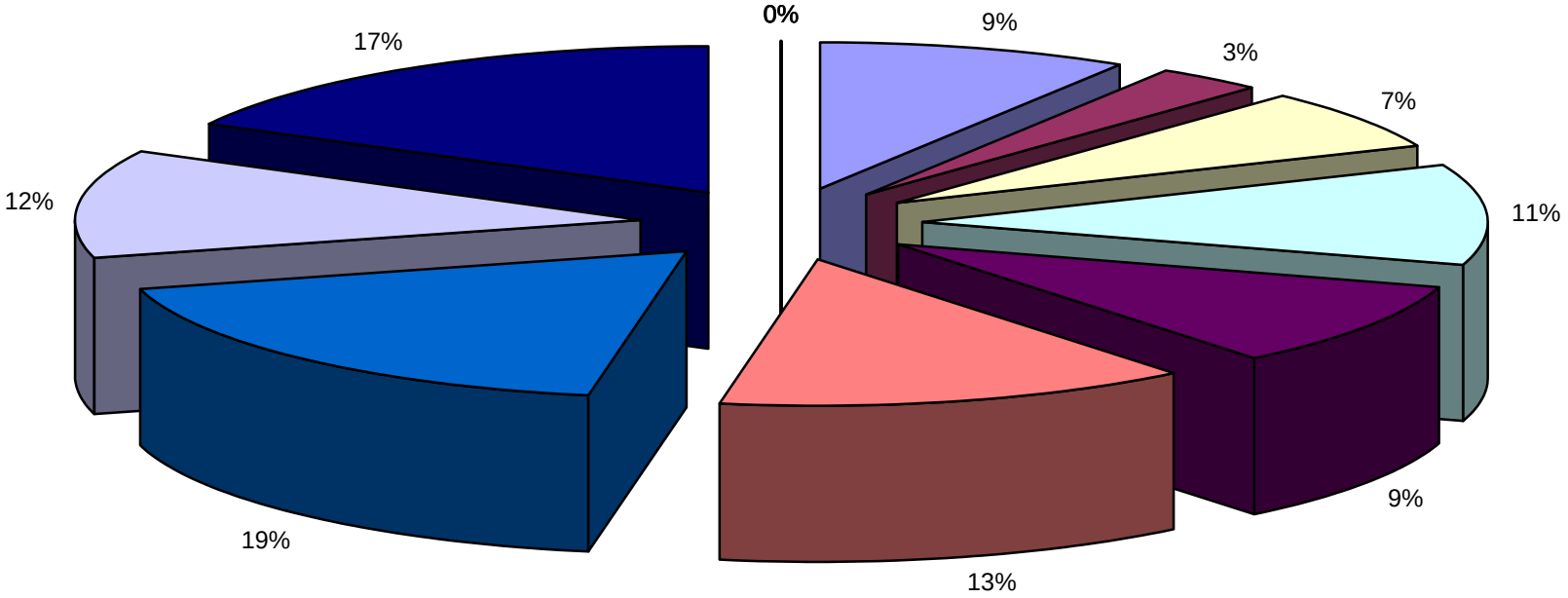
Particle Count
8941



Particle Volume
8941



% of Total Volume
8941



0.5-1.0 1.0-2.0 2.0-4.0 4.0-6.0 6.0-8.0 8.0-10.0 10.-15.0 15.0-20.0 20.0-30.0 30.0-40.0 40.0-50.0 50-100 100-200

U.S. WATER SERVICES
Registered to ISO 9001:2000

Laboratory Analysis Report

Company Name: Esolar Lancaster,CA **Sample Date: 09/12/08**
Sample: 08N15W07N002S **Laboratory Number: 412848942**

Water Analysis

ANALYSIS	RESULT	UNITS
pH	7.48	units
Conductivity	270	umhos/cm
Total Organic Carbon	<1.0	mg/L
P-Alkalinity (CaCO3)	0	mg/L
M-Alkalinity (CaCO3)	90	mg/L
Bromide	<0.5	mg/L
Chloride	19.9	mg/L
Fluoride	<0.4	mg/L
Nitrate (NO3)	<1.0	mg/L
Nitrite (NO2)	1.41	mg/L
Total Phosphate	<1.0	mg/L
Ortho-Phosphate	<0.4	mg/L
TDS	107	mg/L

U.S. WATER SERVICES
Registered to ISO 9001:2000

Laboratory Analysis Report

Company Name: Esolar Lancaster,CA **Sample Date: 09/12/08**
Sample: 08N15W07N002S **Laboratory Number: 412848942**

Water Analysis

ANALYSIS	Total	Dissolved	UNITS
Sulfur (SO4)	45.1	23.4	mg/L
Hardness (CaCO3)	62.7	62.7	mg/L
Calcium Hardness (CaCO3)	44.9	44.3	mg/L
Magnesium Hardness (CaCO3)	17.8	18.4	mg/L
Aluminum	<0.05	<0.05	mg/L
Arsenic	0.010	<0.01	mg/L
Barium	0.013	0.013	mg/L
Beryllium	<0.01	<0.01	mg/L
Boron	0.079	0.080	mg/L
Cadmium	<0.01	<0.01	mg/L
Chromium	<0.01	<0.01	mg/L
Cobalt	<0.01	<0.01	mg/L
Copper	<0.01	<0.01	mg/L
Iron	0.289	0.185	mg/L
Lead	<0.01	<0.01	mg/L
Manganese	0.021	0.023	mg/L
Molybdenum	<0.01	<0.01	mg/L
Nickel	<0.01	<0.01	mg/L
Potassium	3.14	3.14	mg/L
Selenium	0.013	0.011	mg/L
Silica	7.14	7.19	mg/L
Sodium	31.5	27.9	mg/L
Strontium	0.141	0.135	mg/L
Thallium	<0.05	<0.05	mg/L
Tin	0.013	0.014	mg/L
Titanium	<0.01	<0.01	mg/L
Vanadium	<0.01	<0.01	mg/L
Zinc	<0.01	<0.01	mg/L

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Sincerely,
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Laboratory Analysis Report

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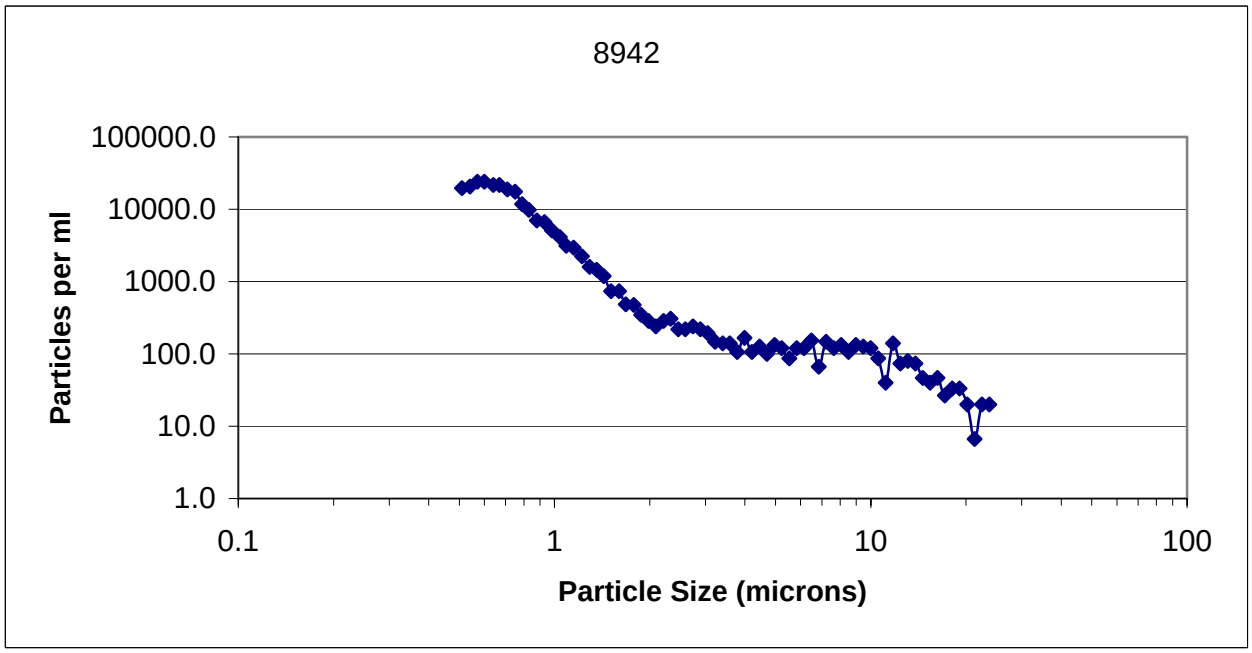
Particle Size Analysis

Company Name: Esolar-Lancaster, CA
Sample: 08N15W07N002S

Sample Date: 09/12/08
Lab Number: 10088942

Particle Size (microns)	Particles per mL	% of Total Particles	Volume ppm	% of Total Volume	Particle Volume
0.5-1.0	208379.1	89.2%	0.0357	1.51%	535293.4591
1.0-2.0	19753.2	8.5%	0.0224	0.95%	336752.6588
2.0-4.0	2626.7	1.1%	0.0341	1.44%	511767.2964
4.0-6.0	793.3	0.3%	0.0530	2.24%	795017.0916
6.0-8.0	606.7	0.3%	0.1047	4.43%	1570593.158
8.0-10.0	620.0	0.3%	0.2400	10.16%	3601114.787
10.-15.0	540.0	0.2%	0.5452	23.07%	8178818.569
15.0-20.0	180.0	0.1%	0.4763	20.15%	7146191.42
20.0-30.0	86.7	0.0%	0.6173	26.12%	9261235.427
30.0-40.0	0.0	0.0%	0.0000	0.00%	0
40.0-50.0	6.7	0.0%	0.2346	9.93%	3519660.265
50-100	0.0	0.0%	0.0000	0.00%	0
100-200	0.0	0.0%	0.0000	0.00%	0
Total	233592.3	100%	2.3634	100%	



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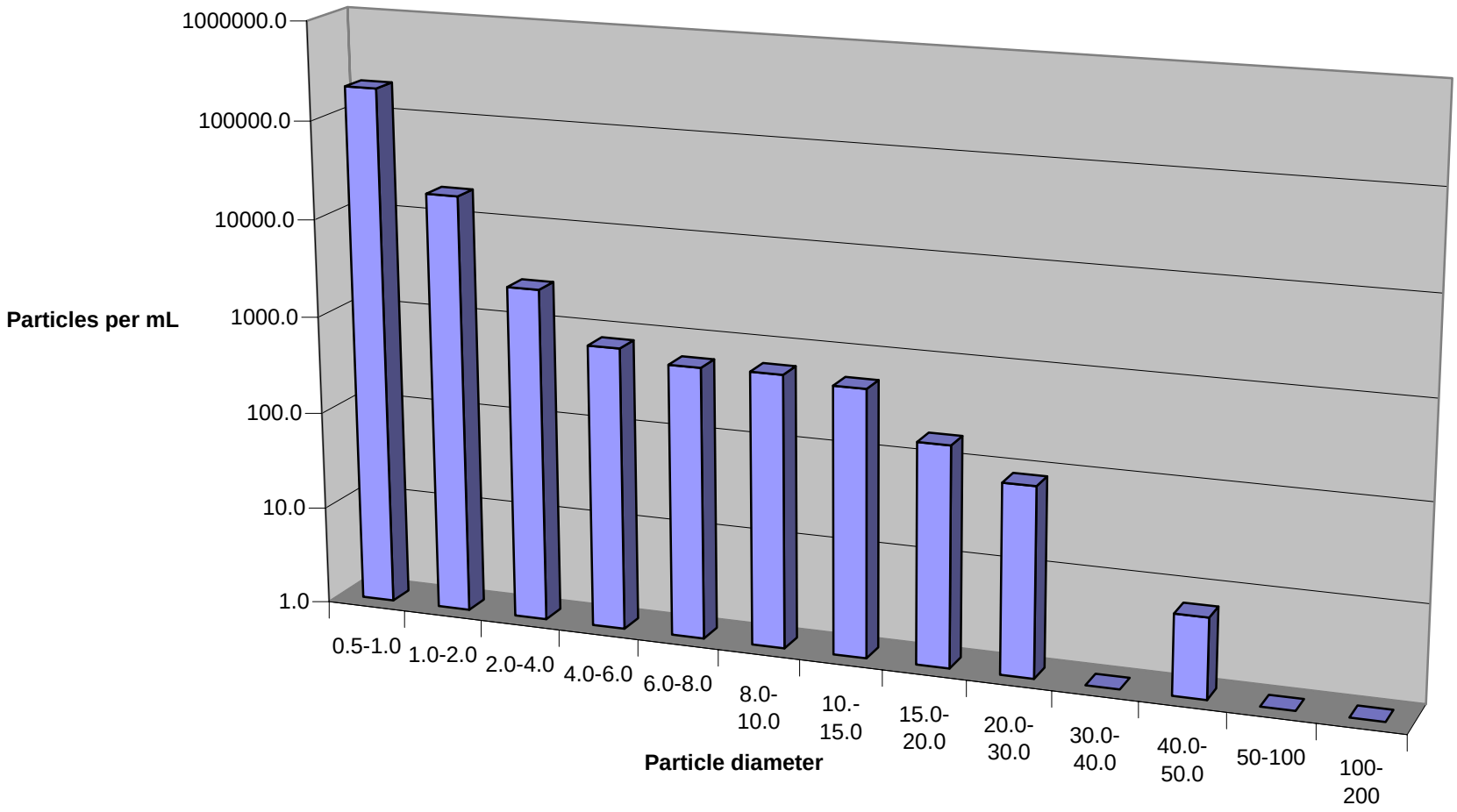

Particle Volume
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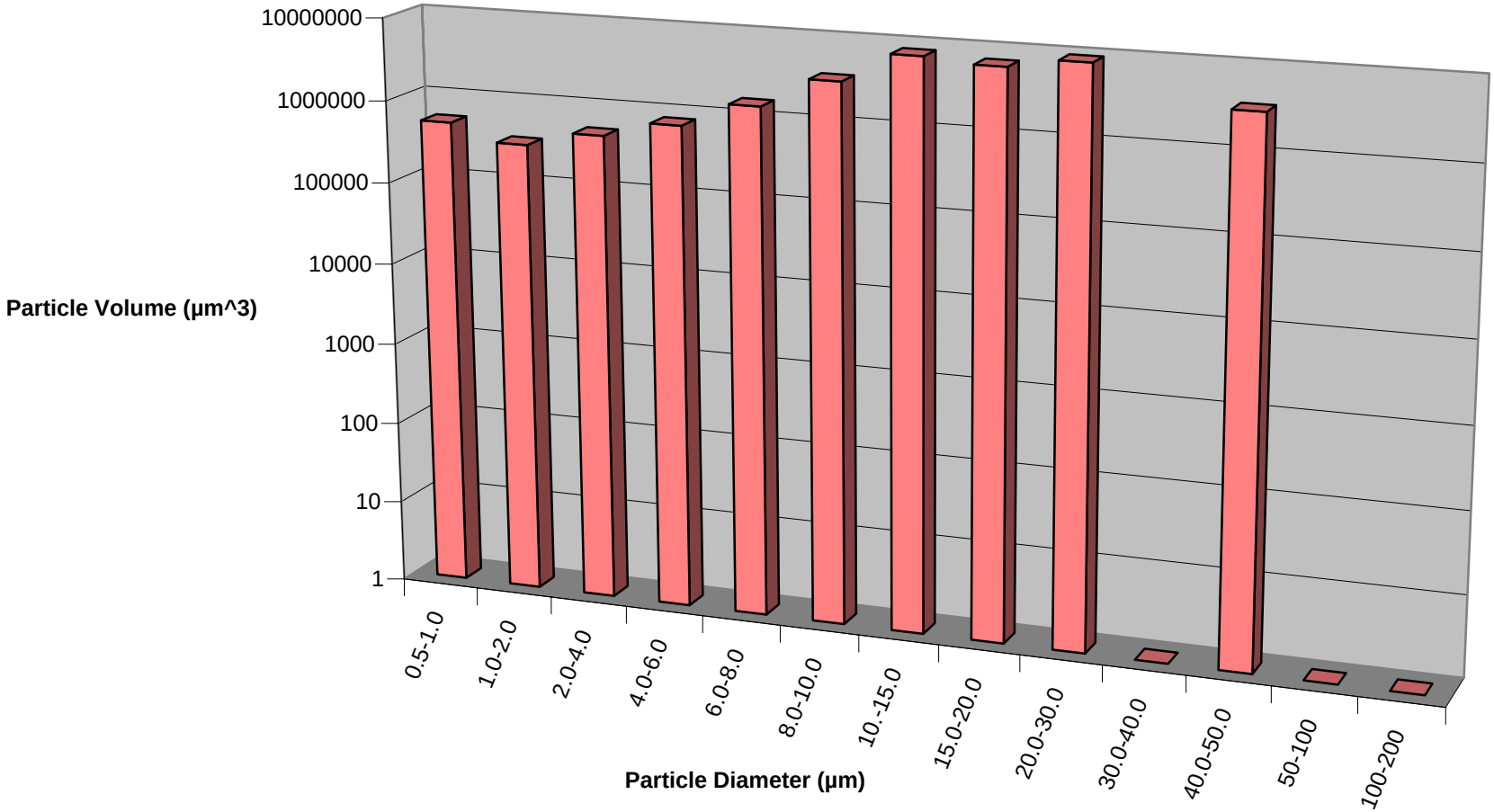
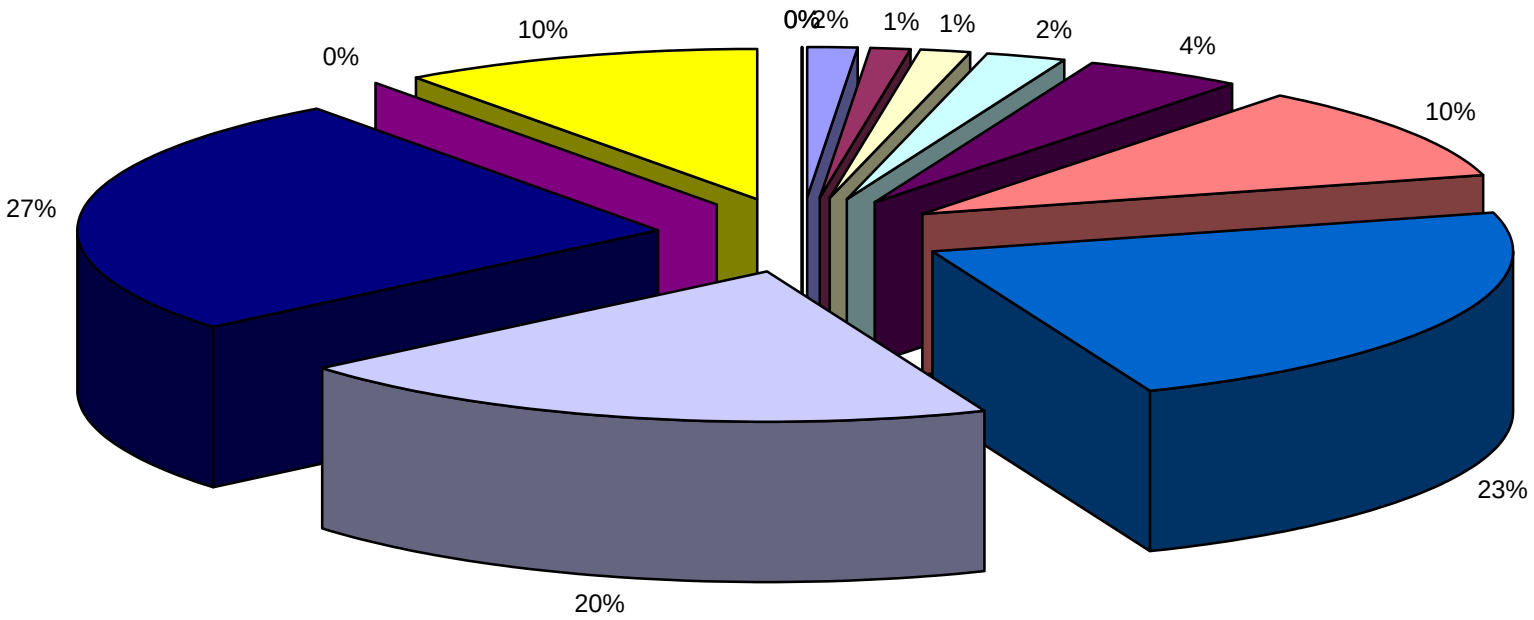


% of Total Volume
8942



0.5-1.0 1.0-2.0 2.0-4.0 4.0-6.0 6.0-8.0 8.0-10.0 10.-15.0 15.0-20.0 20.0-30.0 30.0-40.0 40.0-50.0 50-100 100-200

Appendix F
Air Quality Construction Emissions

APPENDIX F

NRG Alpine Construction Emissions

Construction Equipment

Activity	Equipment	Number of Pieces	Duration (months)	Duration (Days)	Horse-power	Load Factor	Hours per Day	Emission Factors (g/bhp hr) CO	ROG	NOx	SOx	PM10	PM2.5	CO2	Emissions (lbs per Day) CO	ROG	NOx	SOx	PM10	PM2.5	Emissions (metric tons) CO2
Site Preparation and Clearing/Grading	Water Truck	3	3	66	189	0.5	8	1.976	0.449	3.317	0.004	0.200	0.178	324.222	10	2	17	0.02	1	1	49
	Grader	4	2	44	174	0.61	8	2.074	0.488	3.789	0.004	0.219	0.195	346.974	16	4	28	0.03	2	1	52
	Scraper	2	2	44	313	0.72	8	1.44	0.512	4.852	0.005	0.291	0.259	409.544	11	4	39	0.04	2	2	65
	Roller	4	3	66	95	0.56	8	2.255	0.649	3.987	0.004	0.194	0.173	318.534	8	2	15	0.02	1	1	36
Underground Work	Backhoe	3	6	132	108	0.55	8	2.191	0.55	3.426	0.004	0.312	0.278	312.846	7	2	11	0.01	1	1	59
	Roller	3	6	132	95	0.56	8	2.255	0.649	3.987	0.004	0.194	0.173	318.534	6	2	11	0.01	1	0	54
	Water Truck	3	10	220	189	0.5	8	1.976	0.449	3.317	0.004	0.200	0.178	324.222	10	2	17	0.02	1	1	162
System Installation	Forklift	16	10	220	93	0.6	8	1.006	0.223	1.677	0.002	0.102	0.091	170.643	16	4	26	0.03	2	1	268
	Pile Driver	5	8	176	204	0.78	8	2.281	0.281	2.767	0.005	0.146	0.130	426.608	32	4	39	0.07	2	2	478
	Water Truck	0	0	0	189	0.78	8	1.976	0.449	3.317	0.004	0.200	0.178	324.222	0	0	0	0.00	0	0	0
Cleanup/Restoration	Grader	2	1	22	174	0.61	8	2.074	0.488	3.789	0.004	0.219	0.195	346.974	8	2	14	0.01	1	1	13

Note: Emission Factors assume 2010 equipment.

Small Construction Equipment

Activity	Equipment	Number of Pieces	Duration (Days)	Hours per Day	Emission Factors (lb/hr) CO	ROG	NOx	SOx	PM10	PM2.5	CO2	Emissions (lb/day) CO	ROG	NOx	SOx	PM10	PM2.5	Emissions (metric tons) CO2
Underground Work	5-kW Generator	0	132	8	0.07	0.02	0.11	0.0002	0.01	0.01	10.20	0.00	0.00	0.00	0.00	0.00	0.00	0
System Installation	ATV	32	220	8	0.063	0.003	0.002	0.000	0.000	0.000	0.253	16.13	0.72	0.40	0.09	0.03	0.03	6
	5-kW Generator	6	220	8	0.07	0.02	0.11	0.0002	0.01	0.01	10.20	3.40	0.78	5.28	0.01	0.31	0.28	49
Testing	20-kW Generator	2	264	8	0.07	0.02	0.11	0.0002	0.01	0.01	10.20	1.13	0.26	1.76	0.00	0.10	0.09	20

Notes:
EFs from the California Air Resources Board's OFFROAD2007 model for Los Angeles County.
For the ATV, it was assumed the horsepower range would be 25-50 hp.
$PM_{2.5}$ emission factors were calculated following the SCAQMD Particulate Matter (PM) $_{2.5}$ Significance Thresholds and Calculation Methodology, October 2006. For off-road combustion sources, 89% of the PM_{10} would be $PM_{2.5}$.

Onsite Vehicles

Activity	Vehicle	Number of Pieces	Duration (Days)	Miles per Day	Emission Factors (lb/mile) CO	ROG	NOx	SOx	PM10	PM2.5	CO2	Emissions (lb/day) CO	ROG	NOx	SOx	PM10	PM2.5	Emissions (metric tons) CO2
Underground Work	Dump Truck	16	220	10	0.045	0.0278	0.0833	0.0001	0.0063	0.0057	8.4774	7.15	4.45	13.32	0.01	1.00	0.91	135
System Installation	Pickup Trucks	80	220	10	0.005	0.0004	0.0048	0.0000	0.0004	0.0003	0.7676	4.05	0.34	3.83	0.01	0.32	0.28	61
Testing	Pickup Trucks	16	264	10	0.005	0.0004	0.0048	0.0000	0.0004	0.0003	0.7676	0.81	0.07	0.77	0.00	0.06	0.06	15

Offsite Vehicles

Activity	Vehicle	Number of Pieces	Duration (Days)	Miles per Day	Emission Factors (lb/mile) CO	ROG	NOx	SOx	PM10	PM2.5	CO2	Emissions (lb/day) CO	ROG	NOx	SOx	PM10	PM2.5	Emissions (metric tons) CO2
All Phases	Workers	240	264	40	0.004	0.0004	0.0004	0.0000	0.0001	0.0000	0.6318	34.33	3.84	3.92	0.06	0.59	0.28	726

Notes:
EFs from the California Air Resources Board's EMFAC 2007 model for Los Angeles County in the year 2010. It was assumed that the pickup trucks and water trucks would travel at 5 mph and employees would travel at 45 mph.
It was assumed the 2010 emission factors would be a conservative estimate of emissions that could occur as a result of vehicle trips in 2011 because the EMFAC emissions factors decrease slightly over time.

22 workdays per month

		CO	ROG	NOx	SOx	PM10	PM2.5	CO2
Phase 1 Construction Emissions (lbs/day)		45	12	98	0	6	5	201
AVAQMD Thresholds		548	137	137	137	82	82	

Note: Phase 1 = Site Preparation and Clearing/Grading

		CO	ROG	NOx	SOx	PM10	PM2.5	CO2
Phase 2 Construction Emissions (lbs/day)		103.63	19.87	129.17	0.26	8.02	7.14	1306.54
AVAQMD Thresholds		548	137	137	137	82	82	

Note: Phase 2 = Underground Work, System Installation and Testing

		CO	ROG	NOx	SOx	PM10	PM2.5	CO2
Phase 3 Construction Emissions (lbs/day)		8	2	14	0	1	1	13
AVAQMD Thresholds		548	137	137	137	82	82	

Note: Phase 3 = Cleanup/Restoration

APPENDIX F

Summary of Summed Exhaust and Fugitive Dust Emissions and Comparison to AVAQMD Thresholds

	Exhaust Emissions		Fugtive Dust Emissions		Total Emissions	
	PM10	**PM2.5**	**PM10**	**PM2.5**	**PM10**	**PM2.5**
Phase 1 Construction Emissions (lbs/day)	6	5	70	15	76	20
				AVAQMD Thresholds	82	82

Note: Phase 1 = Site Preparation and Clearing/Grading
It was assumed all mass grading activities would occur during Phase 1.

	Exhaust Emissions		Fugtive Dust Emissions		Total Emissions	
	PM10	**PM2.5**	**PM10**	**PM2.5**	**PM10**	**PM2.5**
Phase 2 Construction Emissions (lbs/day)	8.02	7.14	47	10	55	17
				AVAQMD Thresholds	82	82

Note: Phase 2 = Underground Work, System Installation and Testing
It was assumed all excavation activities would occur during Phase 2.

	Exhaust Emissions		Fugtive Dust Emissions		Total Emissions	
	PM10	**PM2.5**	**PM10**	**PM2.5**	**PM10**	**PM2.5**
Phase 3 Construction Emissions (lbs/day)	1	1	NA	NA	1	1
				AVAQMD Thresholds	82	82

Note: Phase 3 = Cleanup/Restoration
It was conservatively assumed that all grading and excavation would occur in Phases 1 and 2 to develop the worst case daily emissions.

Mass Grading Emissions

Phase	Acres Graded per Day	Uncontrolled PM10 Emission Factor (lb/acre/day)	Controlled PM10 Emission Factor (lb/acre/day)	Emissions (lb/day)	
				PM10	**PM2.5**
Site Preparation and Clearing/Grading	9	20	7.8	70	15

1. The site grading default-level emission factor from URBEMIS2007 was assumed to include fugitive dust from truck travel on unpaved surfaces.
2.Emission factor from URBEMIS2007, the controlled emission factor assumes the graded area is watered three times per day with an efficiency of 61%.
3. $PM_{2.5}$ emission factors were calculated following the SCAQMD Particulate Matter $(PM)_{2.5}$ Significance Thresholds and Calculation Methodology, October 2006.
For construction fugitive dust sources, 20.8% of the PM_{10} would be $PM_{2.5}$.

Excavation Emissions

Phase	Total Cubic Yards Excavated	Number of Days	Uncontrolled PM10 Emission Factor (ton/1,000 cy)	Controlled PM10 Emission Factor (ton/1,000 cy)	Emissions (lb/day)	
					PM10	**PM2.5**
Underground Work/Installation	87,000	220	0.059	0.023	47	10

1. Emission factor from URBEMIS2007, the controlled emission factor assumes the graded area is watered three times per day for an efficiency of 61%.
For construction fugitive dust sources, 20.8% of the PM_{10} would be $PM_{2.5}$.

Appendix G
Botanical Resources Report

Report

Technical Report: Botanical Resources of the Alpine Solar Project Site

Prepared for

NRG Inc.

Neenach, California

July 2010

CH2MHILL
3 Hutton Centre Drive
Suite 200
Santa Ana, CA 92707

Contents

Section **Page**

Executive Summary **ES-1**

1.0 Introduction **1-1**
1.1 Project Description 1-1
1.2 Environmental Setting 1-1

2.0 Methods **1-1**
2.1 Introduction 2-1
2.2 Pre-field Preparations 2-1
2.3 Field Survey Methods 2-4
2.4 Methods for Classifying Vegetation 2-5

3.0 Results: Vegetation **2-1**
3.1 Vegetation Types 3-1
3.1.1 Non-native Grassland 3-1
3.1.2 Agricultural 3-1
3.1.3 Rabbitbrush Scrub 3-1
3.2 Vegetation Types of Proposed Project Area 3-2

4.0 Results: Special-status Plants **3-1**
4.1 Special-status Plants Abundance and Distribution within the Project Area . 4-1

5.0 References **4-1**

Tables

1 Special-Status Species that May Occur in the Project Area
2 Vegetation Types Within the Proposed Alpine Project Area
3 List of Plants Observed within Project Features

Appendixes

A Figures
B Agency Letters
C CNDDB Results
D List of Plants Observed within Project Features
E Site Photographs

Executive Summary

NRG is proposing to develop a solar facility in the western Antelope Valley of southern California. The proposed Alpine site is located in Los Angeles County, approximately 20 miles west-northwest of Lancaster, California, and west of State Route 14 (SR-14).

Botanical surveys for the ±782.93-acre (ac) Alpine Solar Generating Station Project were conducted in May 2010. The Alpine Solar Generating Station project site study area (Project) consists of three areas: the proposed West Parcel site (±593.30 ac); the East Parcel (±199.63 ac); and the utility lines located within existing roads but buffered to 250-feet (±242.42 ac).

The Project area provides suitable or marginal habitat for 3 special-status plant species. Botanical surveys of the Project site were conducted in May 2010. A total of 57 genera representing 31 different plant families were observed in the Project site during the May 2010 botanical surveys. A total of 70 species were observed in the Project site, of which 50 are native and 20 are nonnative.

No federal or state listed plant species were observed in the Project site, and no other special-status plant species were observed in the Project site during botanical surveys. No special-status sensitive natural communities occur in the Project site.

SECTION 1.0

Introduction

1.1 Project Description

The proposed Project site is located in a rural and sparsely populated area of Antelope Valley in the northeastern portion of Los Angeles County (Figure 1, Appendix A). The largest communities in the immediate vicinity include Rosamond, which is approximately 18 miles to the northeast, and Lancaster, which is approximately 20 miles to the southeast. Recreational opportunities in the area include the Los Angeles County Desert Pines Wildlife Sanctuary, approximately 4 miles to the south; the Arthur B. Ripley Desert Woodland State Park, approximately 3 miles to the south; and the Antelope Valley Poppy Preserve State Park, located about 7 miles to the southeast. Major transportation facilities include State Route 14 (SR-14) north-south; SR-138/ Avenue D east-west; and several public, private, and military airports.

The Project site is generally bounded by West Avenue B on the north, West Avenue C on the south, 220th Street West on the West, and 200th Street West on the east. The Western and Eastern Parcels are approximately 0.5 mile from their nearest property boundary. The Project site can be located on the Neenach School USGS topographic quad and consists of assessor's parcel numbers (APNs) 3256-006-012, -013, 3256-015-002, -005, -006, -008, -008, -010, -011, -013, -014, -015, and -016.

NRG Alpine Suntower, LLC (the "Applicant") proposes to construct, own, and operate a renewable energy project providing electricity generated from clean solar technology. The Alpine Solar Generating Station (Project) will consist of a nominal 92-megawatt (MW) AC solar photovoltaic (PV) generating facility located on approximately 580 acres of developable area of the approximately 800-acre Project site. The Project site includes two distinct areas, defined for the purpose of this Application as the Western Parcel (approximately 600 acres) and the Eastern Parcel (approximately 200 acres). Power generated by the Project will be delivered to the California Independent System Operator (CAISO) grid by constructing a new, one-mile-long, single-circuit 66-kilovolt (kV) transmission line to the Neenach Substation, which is owned and operated by Southern California Edison (SCE). The 66-kV transmission line for the Project will be located adjacent to 210th Street West (currently an unpaved road) and will extend from the Project site to the Neenach Substation. The proposed access road will be located on 210th Street West and on a portion of West Avenue C, which is a one-lane unpaved road.

1.2 Environmental Setting

The Project site will be located on land that has been extensively used for agriculture production. The Project electric generating units and related stormwater control structures will occupy approximately 580 acres of the 800-acre site. A large drainage channel runs east-west across the northern portion of the Western Parcel and the northwestern corner of the Eastern Parcel. The ASGS solar PV modules will be located at least 100 feet from the

centerline of the defined top of bank of the drainage channel. The Project site is characterized by terrain that is gently sloped to the northeast, south of the natural drainage, and to the southeast, north of the natural drainage. Elevation ranges from approximately 2,730 to 2,765 feet above mean sea level (amsl). The local climate is dry, with rainfall averaging below 10 inches per year and no natural perennial surface waters near the site. The prevailing wind direction is easterly with a mean speed of 5.5 mph. Ambient temperatures vary from the high 30s to low 100s degrees Fahrenheit.

A preliminary geologic and geotechnical investigation was performed to evaluate general subsurface conditions, seismic hazards, and other geologic hazards and to provide general recommendations for Project design and construction. The investigation showed that (i) alluvial sediments underlie the Project site and vicinity, (ii) no active faults traverse the site, so site-specific seismic studies will not be required, and (ii) construction of the proposed solar power plant is feasible from a geologic and geotechnical engineering viewpoint. A topographic survey was also performed to establish the site benchmarks and boundaries and to understand grading and drainage requirements.

The Project area is located within the Antelope Valley, and its biogeography and climate are typical of that region. In terms of surface water hydrology, an ephemeral drainage was observed along the northwestern project boundary. No micro-topographic depressions that may occasionally pool water were observed.

Mapped soil units on the Project site include Greenfield sandy loam, 0- to 2-percent slopes, Hanford coarse sandy loam, Vernalis sandy loam, and Vernalis loam. Greenfield sandy loam occupies approximately 30 percent of the Project site; Hanford coarse loam occupies approximately 25 percent; Vernalis sandy loam occupies 8 percent; and Vernalis loam occupies the remaining 37 percent (NRCS, 2010a).

Greenfield series soils consist of deep, well-drained soils that formed in moderately coarse and coarse-textured alluvium derived from granitic and mixed rock sources. Greenfield soils are on alluvial fans and terraces and have slopes of 0 to 30 percent. The mean annual precipitation is about 15 inches, and the mean annual air temperature is about 62 degrees F. These soils are used for producing a wide variety of irrigated field, forage, and fruit crops and also for growing dryland grain and pasture. Vegetation on uncultivated areas consists of annual grass, forbs, and some shrubs (NRCS, 2010b).

Hanford series soils consist of very deep, well-drained soils that formed in moderately coarse textured alluvium dominantly from granite. Hanford soils are on stream bottoms, floodplains, and alluvial fans and have slopes of 0 to 15 percent. The mean annual precipitation is about 12 inches, and the mean annual air temperature is about 63 degrees F. Hanford soils are used for growing a wide range of fruits, vegetables, and general farm crops. They are also used for urban development and dairies. Vegetation in uncultivated areas is mainly annual grasses and associated herbaceous plants (NRCS, 2010c).

The Vernalis series soils consist of very deep, well-drained soils on alluvial fans and flood plains. These soils formed in alluvium from mixed rock sources and are used mostly for growing irrigated crops. Slope is 0 to 5 percent. The mean annual precipitation is about 11 inches, and the mean annual temperature is about 61 degrees F. Some areas are used for livestock grazing and growing non-irrigated small grain. Vegetation in uncultivated areas is

annual grasses and forbs with some sagebrush and rabbitbrush at higher elevations in the Antelope Valley Area (NRCS, 2010d).

Although the entire Project site has been previously disturbed and historically used for agricultural production and grazing, the site supports several vegetation communities. The dominant vegetation community is non-native grassland (Holland, 1986). Other vegetation communities occurring in the Project site include rabbitbrush scrub and ruderal (Holland, 1986). Vegetation communities occurring within the 250-foot Project site and lateral buffers include Mojavean juniper woodland with intergrades of Joshua tree woodland (Holland, 1986).

Also, a vacant homestead exists in the southwestern corner of the proposed Project area; the homestead consists of dozens of ornamental, non-native trees, a water tank, a concrete pad, and small piles of rubbish from the previous tenants. The ornamental trees are 10-20 feet in height and do not appear tall enough to provide nesting sites for raptors. Two water wells with concrete pads are also visible along the southern border.

SECTION 2.0

Methods

2.1 Introduction

This section describes the methods used to complete the protocol-level field surveys of the proposed Project components. Surveys were completed within the areas shown on Figure 2 in Appendix A. Protocol-level surveys were conducted within the Project boundary, which contains the Western and Eastern Parcels, access roads, and utility lines.

Surveys were completed for special-status plants. Vegetation types of the Project area were named and classified.

The protocol-level rare plant surveys were conducted with the goal of locating and mapping all individuals of special-status plants throughout the Project area. These surveys were floristic in nature and followed the U.S. Fish and Wildlife Service's (USFWS's) *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants* (USFWS Guidelines) (USFWS, 1996). Vegetation types were identified during reconnaissance visits and were confirmed during protocol-level surveys.

2.2 Pre-field Preparations

Pre-field research was conducted to select special-status plant species with the potential to be found within the Project area. For each potentially occurring species, information was compiled on conservation status, distribution, habitat characteristics, blooming time, presence in the project region, and other information used in field identification.

A plant was considered to be of special status if it met one or more of the following criteria:

- Federally listed, proposed, or a candidate for listing as threatened or endangered (USFWS, 2010)
- State listed, proposed, or a candidate for listing as threatened or endangered (CNDDB, 2010)
- California Native Plant Society (CNPS) designated species (CNPS, 2010)

A species was determined to have the potential to occur within the Project area if its known or expected geographic range includes the Project area or its vicinity and if its known or expected habitat is found within or near the Project area. For this project, the project area vicinity includes the Antelope Valley and adjacent areas with similar habitats.

The CDFG South Coast Region 5 office was contacted in February 2008 for a list of threatened, endangered, and other special-status species potentially present in the Project study area. The South Coast Region 5 office responded on April 7, 2008 (Appendix B). The CDFG recommended a search of CNDDB to determine whether special-status species could occur in the Project area. The California Native Diversity Database (CNDDB) was consulted

for documented occurrences of special-status species within the site boundary and a 10-mile buffer of the site (Appendix C).

The USFWS office in Ventura, California, was contacted in February 2008 for a list of threatened, endangered, and other special-status species potentially present in the Project study area. The USFWS responded on April 18, 2008. Based on a review of records and the proposed Project location, the USFWS does not believe that the site could support any listed, proposed, or candidate species for which the USFWS is responsible (Appendix B). The USFWS online species list for Los Angeles County was reviewed for federally listed, candidate, and proposed species that potentially occur on the site or in the Project vicinity. The species list for eastern Kern County was also reviewed, as the project is located near the Los Angeles County-Kern County border.

A search of the CNPS online inventory was conducted to identify additional special-status plant species with potential to occur on the site. Table 1 provides a list of species identified during the information review.

As noted below, the search of the CNDDB and USFWS county species records resulted in a list of potential special-status species that could occur in the Project area.

TABLE 1
Special-Status Species that May Occur in the Project Area

Common Name	Scientific Name	Habitat Preference Distribution and Range	Federal	State	CNPS	Habitat Present
Plants						
Braunton's milk-vetch	*Astragalus brauntonii*	- Chaparral (Chprl) - Coastal scrub (CoScr) - Valley and foothill grassland (VFGrs)/recent burns or disturbed areas, usually sandstone with carbonate layers; 4-640m	E	-	1B.1	Yes
Nevin's barberry	*Berberis nevinii*	- Chaparral (Chprl) - Cismontane woodland (CmWld) - Coastal scrub (CoScr) - Riparian scrub (RpScr)/sandy or gravelly; 274-825m	E	E	1B.1	No
Round-leaved filaree	*California macrophylla*	Found in clay soils in cismontane woodland, valley and foothill grassland;15-1200M	-	SC	1B.1	No
Slender mariposa-lily	*Calochortus clavatus var. gracilis*	Chaparral, coastal scrub, Valley and foothill grassland; 320-1000 m	-	-	1B.2	No
Pierson's morning-glory	*Calystegia peirsonii*	Found in chaparral coastal scrub, chenopod scrub, cismontane woodland, and lower montane coniferous forest. Often in disturbed areas or along roadsides or in grassy, open areas 390-1470M. Open areas along road, exposed rocky soils and on steep cliffs.	-	-	4.2	No

TABLE 1
Special-Status Species that May Occur in the Project Area

Common Name	Scientific Name	Habitat Preference Distribution and Range	Federal	State	CNPS	Habitat Present
San Fernando Valley spineflower	*Chorizanthe parryi var. fernandina*	Found on sandy soils in coastal scrub habitat on sandy banks and along dry washes; 3-1035M	C	E	1B.1	No
Clokey's cryptantha	*Cryptantha clokeyi*	Mojavean desert scrub; 800-1280 m	-	-	1B.1	No
Slender-horned spineflower	*Dodecahema leptoceras*	- Chaparral (Chprl) - Cismontane woodland (CmWld) - Coastal scrub (CoScr)(alluvial fan)/sandy; 200-760	E	E	1B.1	No
Conejo dudleya	*Dudleya parva*	- Coastal scrub (CoScr) - Valley and foothill grassland (VFGrs)/rocky or gravelly, clay or volcanic; 60-450m	T	-	1B.2	Yes
Marcescent dudleya	*Dudleya cymosa spp. marcescens*	- Chaparral (Chprl)/volcanic, rocky; 150-520m	T	R	1B.2	No
Santa Monica Mountains live-forever	*Dudleya cymosa spp. ovatifolia*	- Chaparral (Chprl) - Coastal scrub (CoScr)/volcanic or sedimentary, rocky; 150-1675	T	-	1B.2	No
Verity's dudleya	*Dudleya verity*	- Chaparral (Chprl) - Cismontane woodland (CmWld) - Coastal scrub (CoScr)/volcanic, rocky; 60-120m	T	-	1B.2	No
delicate bluecup	*Githopsis tenella*	Chaparral, cismontane woodland/mesic; 1100-1900 m	-	-	1B.3	No
Madera linanthus	*Leptosiphon serrulatus*	Dry slopes, often on decomposed granite in cismontane woodland, lower montane coniferous woodland; 300-1300 m	-	-	1B.2	No
Short-joint beavertail	*Opuntia basilaris var. brachyclada*	Found in chaparral, Joshua tree woodland, Mojave Desert scrub, and pinyon-juniper woodland communities at elevations of 900-2000 m.	-	-	1B.2	Yes
Spreading navarretia	*Navarretia fossalis*	Chenopod scrub, marshes and swamps, playas, vernal pools; 30-1300m	T	-	1B.1	No
California orcutt grass	*Orcuttia californica*	Vernal pools; 15-660m	E	E	1B.1	No
Lyon's pentachaeta	*Pentachaeta lyonii*	Chaparral, coastal scrub, Valley and foothill grassland/rocky, clay; 30-630m	E	E	1B.1	No
Greata's aster	*Symphyotrichum greatae*	Found in chaparral, cismontane woodland, mesic canyons 800-1500m. Along stream in riparian woodland. Associated with A*lnus rhombifolia, Salix laevigata, Quercus chrysolepis, Typha latifolia, Xanthium strumarium, and Juncus microphyllus.*	-	-	1B.3	No

The full list above includes those species that initially were considered to have the potential to occur within the project area; however, after additional data and site review the species are not expected to occur because no suitable habitat for them is known to occur within the project area or because no locations for them are known from within the Project vicinity. These species are retained as "not expected to occur" because of lack of suitable habitat to support the species.

Surveyors received project-specific training prior to the field surveys. Photo guides containing close-up photos of potentially occurring special-status common natives were prepared and reviewed prior to field surveys.

2.3 Field Survey Methods

Field work, including reconnaissance field review, was conducted on April 1, 2010; protocol-level surveys were conducted on May 5, 6, 7, 12, 13, and 14, 2010.

During the reconnaissance survey, vegetation types were analyzed, plant growth stage was determined, familiarization with project component locations occurred, and preliminary plant lists were compiled.

Protocol-level surveys for special-status plants were conducted in all proposed project component sites, including the Project boundary and utility line corridors located outside the Project boundary and within a 250-foot buffer. The goal of these surveys was to census, map, photograph, and record habitat data for every special-status plant location observed. Surveys were floristic, meaning that all plants were identified to the level needed to determine whether they were special-status species. Surveys were completed in early May, at a time when all potentially occurring special-status plants with moderate to high likelihood of occurrence and most species with low to very low likelihood of occurrence would be identifiable from flowers or distinctive vegetative features. Rainfall within the Project area preceding the survey was likely above average and late in the season, based on the abundance and size of the common and typical annual plant species that were observed and appear most abundantly in years of average to above-average rainfall. Special-status plant surveys met the recommendations of the botanical survey guidelines of the USFWS (USFWS, 1996).

The ability of surveyors to detect and identify plants in the field rapidly and accurately was enhanced by the training session of common species to assure the accuracy of plant lists compiled by the survey crew. All crew members used site-specific photo guides and preliminary plant lists throughout the field survey.

Surveyors walked transects at 50-foot intervals to search for special-status plants. The 50-foot interval spacing increased the likelihood of detecting small, cryptically colored special-status plants.

Surveyors walked transects at 100-foot intervals within a portion of the Eastern Parcel. Transects within the 0.5-mile-square parcel bordered on the west by 205th Street, on the north by Avenue B-8, on the east by 200th Street, and on the south by Avenue C were greater spaced because of a dense monotypic stand of mustard occupying this recently cultivated agricultural field.

Transect lines were printed on paper maps and were included in background files on the Trimble GeoXT Global Positioning System (GPS) units that were used to navigate and take data in the field. Surveyors walked the transect lines shown on the background files. Each surveyor searched within a separate 50-foot-wide corridor. Crew members stayed more or less together while walking each set of transects. Habitat data was recorded in field notes.

In addition to the Project site boundary, all project components were buffered 250 feet to determine whether special-status species occur in less disturbed lands on adjacent parcels.

Proposed project utility lines were also buffered 250 feet to accommodate unanticipated realignment.

2.4 Methods for Classifying Vegetation

The principle references used in naming and classifying the Project area vegetation include *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland, 1986) and *A Manual of California Vegetation* (Sawyer and Keeler-Wolf, 1995).

A preliminary project-specific description of vegetation types and subtypes, based on observations of dominant species and habitat characteristics, was developed during reconnaissance-level visits to the Project area. These descriptions were refined during protocol-level surveys using more thorough observations of the Project area vegetation. Descriptions of Project area vegetation types and subtypes are provided in Section 3.

SECTION 3.0

Results: Vegetation

This section includes results of the vegetation classification developed for this Project and provides summary descriptions of the vegetation within each Project feature. The Project area vegetation types, including the reconnaissance-level survey area, include non-native grassland, rabbitbrush scrub, and ruderal. These vegetation types are distinguished on the basis of plant species composition, substrate type, and terrain.

A list of all plant species observed within the Alpine project site during surveys conducted for this project is provided in Appendix D. Representative photographs within the Project site are presented in Appendix E.

3.1 Vegetation Types

3.1.1 Non-native Grassland

The predominant vegetation community on the Project site is previously disturbed non-native grassland with varying degrees of disturbance. These areas had previously been in agricultural production but have been fallow long enough to have been colonized by herbaceous species, although not long enough to support shrub species. Vegetation in all areas is dominated by ruderal species, including cheatgrass (*Bromus tectorum*), red brome (*Bromus rubens*), rip-gut brome (*Bromus diandrus*), Russian thistle (*Salsola tragus),* bristly fiddleneck (*Amsinkia tessellata*), red-stem filaree (*Erodium cicutarium*), London rocket (*Sisimbrium ireo*), tumblemustard (*Sysimbrium altissimum*), and foxtail barley (*Hordeum jubatum*). Native species occurring in fewer numbers include chick lupine (*Lupinus microcarpus*), desert dandelion (*Malacothrix californica var. glabrata*), and evening primrose (*Camissonia campestris*). Non-native grassland is the dominant vegetation within the proposed Project site, making up most of the Western Parcel.

3.1.2 Agricultural

The second most abundant vegetation community is recently cultivated agricultural land. This community occurs on a 0.5-square-mile parcel within the Eastern Parcel bordered on the west and north by a wind row of pine trees (*Pinus* spp.). This parcel had recently been used for carrot cultivation, and the remnant plow rows now support a monotypic stand of tumble mustard.

3.1.3 Rabbitbrush Scrub

The third most abundant plant community on the Project site is Rabbitbrush scrub (Holland, 1986), dominated by the Mojave rubber rabbitbrush (*Chrysothamnus nauseosus spp. mohavensis*). This community is a disturbance-maintained community (Holland, 1996). Rabbitbrush scrub is a plant community that results from prior land use disturbance and contains both native and non-native habitat elements. Observed native herbaceous understory species include Fremont's pincushion (*Chaenactis fremontii*), California poppy (*Eschscholtzia californica*), chick lupine (*Lupinus microcarpus*), and desert dandelion. Common

non-native species observed included red brome, rip-gut brome, Russian thistle, tumble mustard, London rocket (*Sisimbrium ireo*), and red leaved filaree.

Mojavean Juniper Woodland and Scrub

The least abundant vegetation community is Mojavean juniper woodland (Holland, 1986). This community is an open woodland dominated by California juniper (*Juniperus californicus*) and little shrub understory. In the Project area, Mojavean Juniper Woodland intergrades with Joshua tree (*Yucca brevifolia*) woodland, although it is much less abundant.

This vegetation community does not occur within the Project boundary; rather, the vegetation community occurs within the 250-foot buffer of the Project site and utility lines. This juniper/Joshua tree woodland appears to be a remnant stand that has been fragmented by development and other activities such as illegal dumping, grazing, and habitation.

3.2 Vegetation Types of Proposed Project Area

This section describes the vegetation observed within each proposed Project feature. Vegetation types are summarized in Table 2. The area of each vegetation type and subtype found within each Project feature is roughly estimated, based on visual examination of high resolution aerial photographs. No desert washes, wetlands, or aquatic features were observed anywhere within the Project site.

TABLE 2
Vegetation Types within the Proposed Alpine Project Area

Project Feature	Vegetation Type Present	Estimated Percent Cover within the Project Feature
Western Parcel	Non-Native Grassland	75-80
	Rabbitbrush scrub	20-25
Eastern Parcel	Rabbitbrush scrub	33
	Agricultural	66
Utility Lines	Non-Native Grassland	30-35
	Rabbitbrush scrub	40-45
	Mojavean Juniper Woodland	20-25

SECTION 4.0

Results: Special-status Plants

This section includes the results of field surveys for special-status plants.

4.1 Special-status Plants Abundance and Distribution within the Project Area

The Project site provides suitable or marginal habitat for three special-status plant species. Botanical surveys of the Project site were conducted in May 2010; a total of 57 genera representing 31 plant families were observed in the Project site during the May 2010 botanical surveys. A total of 70 species were observed in the Project site, of which 50 are native and 20 are nonnative.

No special-status plants were found within any of the proposed Project features. Protocol-level surveys were conducted within all proposed Alpine Project features, including the Project site boundary, utility alignments, access roads, and 250-foot buffer.

SECTION 5.0

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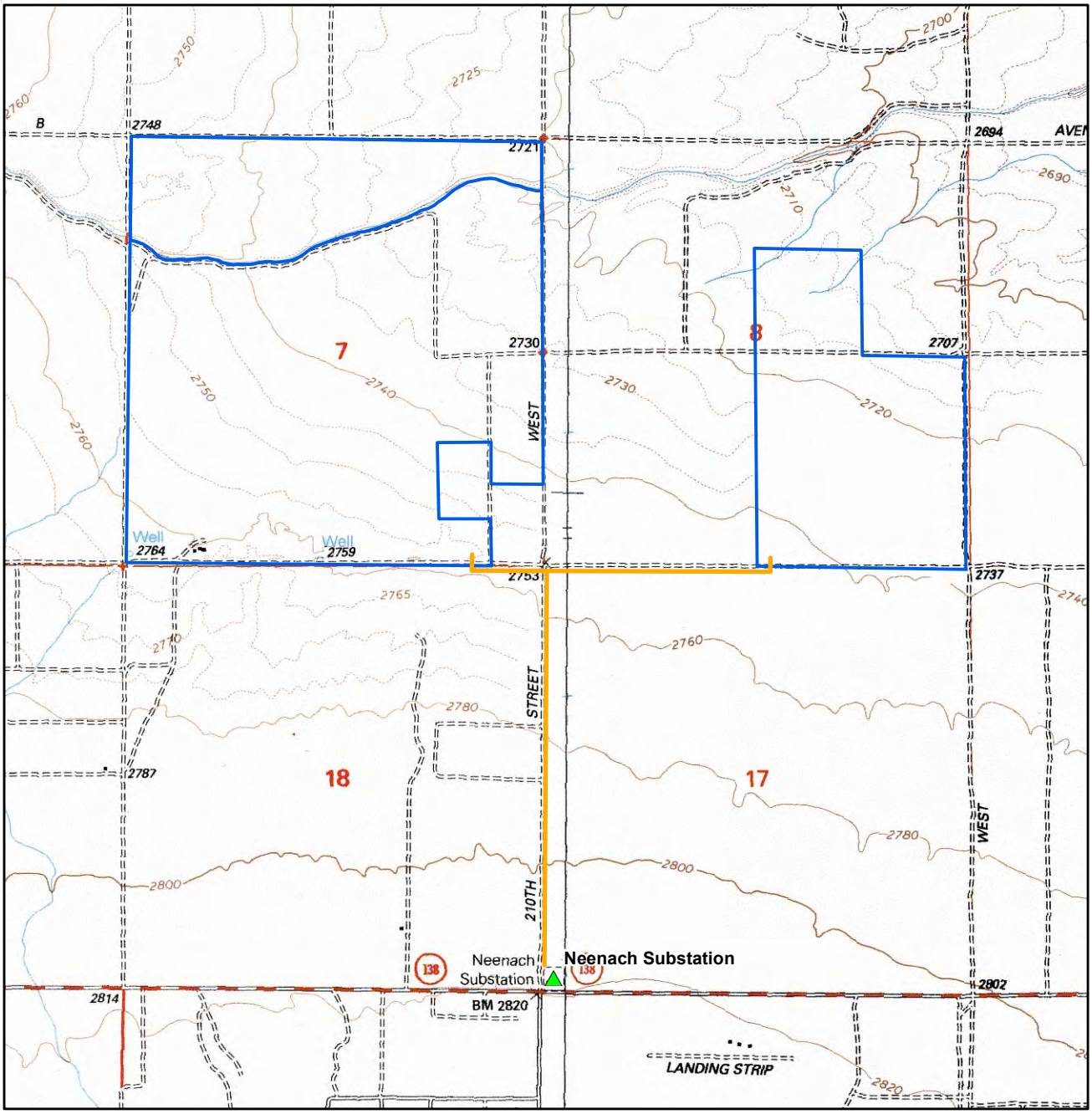
Appendix A – Figures



LEGEND

- Substation
- Transmission Line
- Project Site

VICINITY MAP

N

0 1,000 2,000

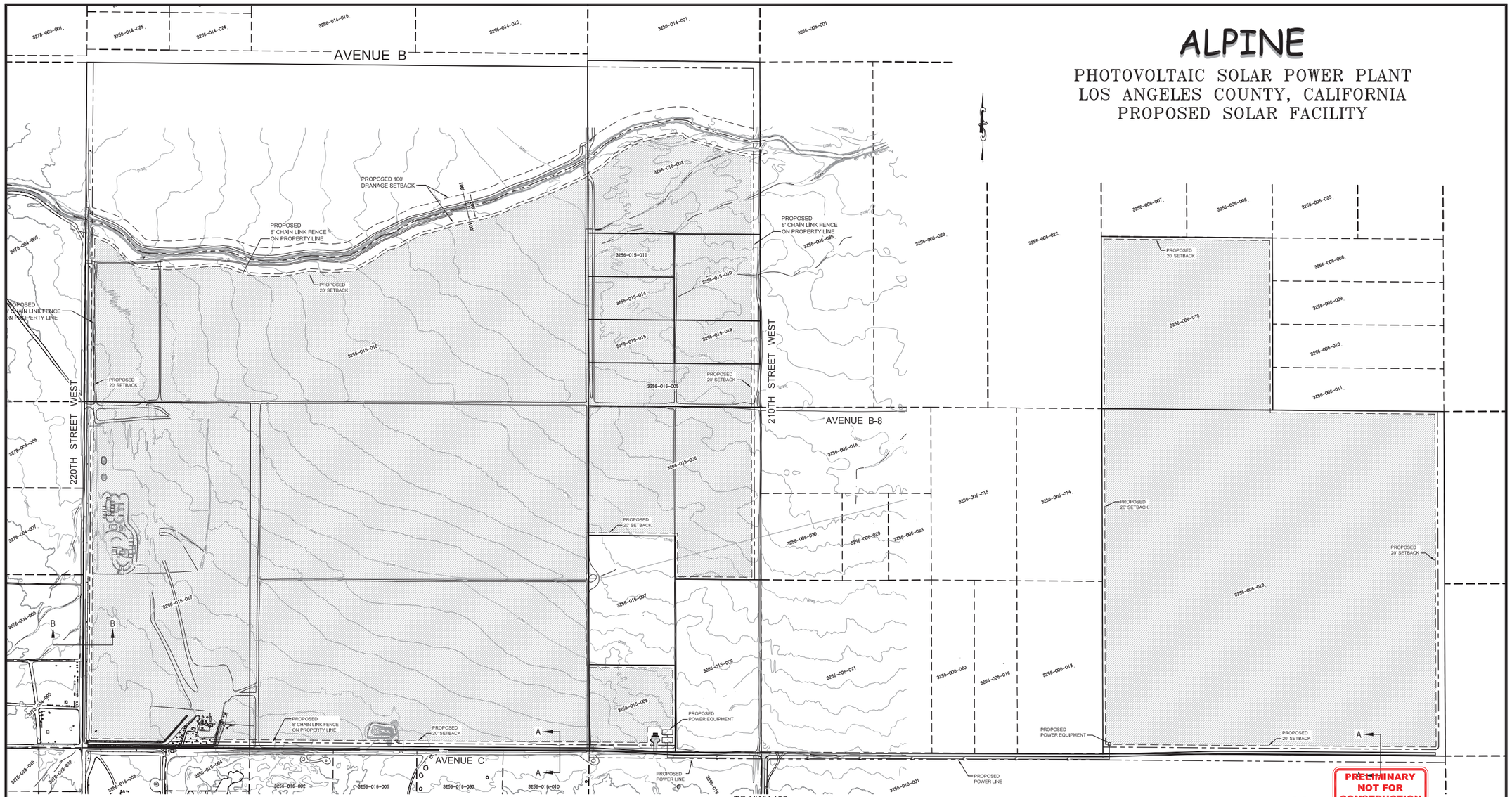
Feet

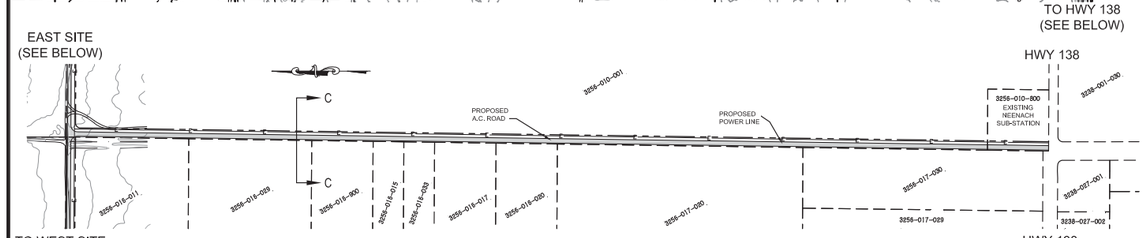
Project Site

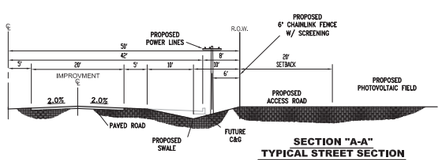
Alpine Solar Generating Station

ALPINE

PHOTOVOLTAIC SOLAR POWER PLANT
LOS ANGELES COUNTY, CALIFORNIA
PROPOSED SOLAR FACILITY







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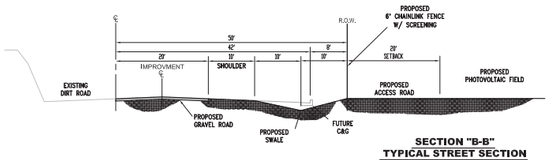
TYPICAL STREET SECTION
NOT TO SCALE



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TYPICAL STREET SECTION
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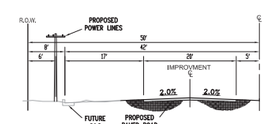


SECTION "C-C"
TYPICAL STREET SECTION
NOT TO SCALE

LEGEND

PROPOSED PHOTOVOLTAIC FEILDS

SITE INFORMATION:

GROSS SITE ACREAGE:	
WEST:	25,844,107 SF/593.30 AC
EAST:	8,695,691 SF/199.63 AC
NET SITE AREA:	
WEST:	25,083,166 SF/576.06 AC
EAST:	8,441,833 SF/193.80 AC
EXISTING ZONING:	A-2-5
PROPOSED ZONING:	A-2-5
EXISTING LAND USE:	AGRICULTURAL
PROPOSED LAND USE:	PHOTOVOLTAIC SOLAR POWER PLANT
THOMAS BRO'S MAP:	X
PROPOSED BUILDINGS:	
ADMINISTRATION BUILDING:	X SF.

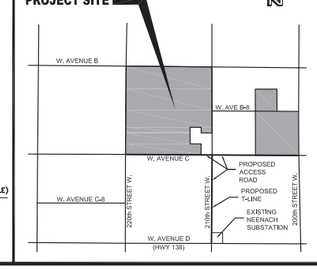
MINIMUM SETBACKS:	REQUIRED	PROVIDED
FRONT	?	20'
REAR	?	20'
SIDE	?	20'

PARKING SUMMARY:

	REQUIRED	PROVIDED
TOTAL OFFICE AREA, 450 SQ. FT. (1SP/250 SQ. FT.)	2	2
TOTAL EMPLOYEES LARGEST SHIFT, (1SP/PER EMPLOYEE)	2	2
DISABLED PARKING (MIN. 1 VAN ACCESSIBLE, 17'X 19')	1 VAN ACCESSIBLE	1 SPACES (1 VAN ACCESSIBLE)
TOTAL PARKING REQUIRED	5	6

VICINITY MAP

N.T.S.



JOSEPH E. BONADIMAN & ASSOCIATES INC.
consulting engineers land surveyors
234 N. ARROWHEAD AVE., SAN BERNARDINO, CA 92408-1013
PHONE: (909) 885-3806 - FAX: (909) 381-1721

VERTICAL DATUM

BENCH MARK: L-7035, 50MM(2IN) IP & LACO BM TAG UP 25MM(1IN) 9.4M(31FT) S/W/O C/L LANCASTER RD & 0.2K(0.5MI) S/O AVE D 900MM(3FT) S/W/O TEL RISER 9.1M(30FT) N/O C/L DIRT RD TO W.

VERTICAL DATUM _____ NAVD 88
ELEVATION _____ 2820.722'

HORIZONTAL DATUM

BASIS OF BEARINGS:
BEARINGS SHOWN HEREON ARE BASED ON CALIFORNIA COORDINATE SYSTEM ZONE 5, 1983 N.A.D. AS DERIVED FROM STATIC G.P.S. OBSERVATIONS.

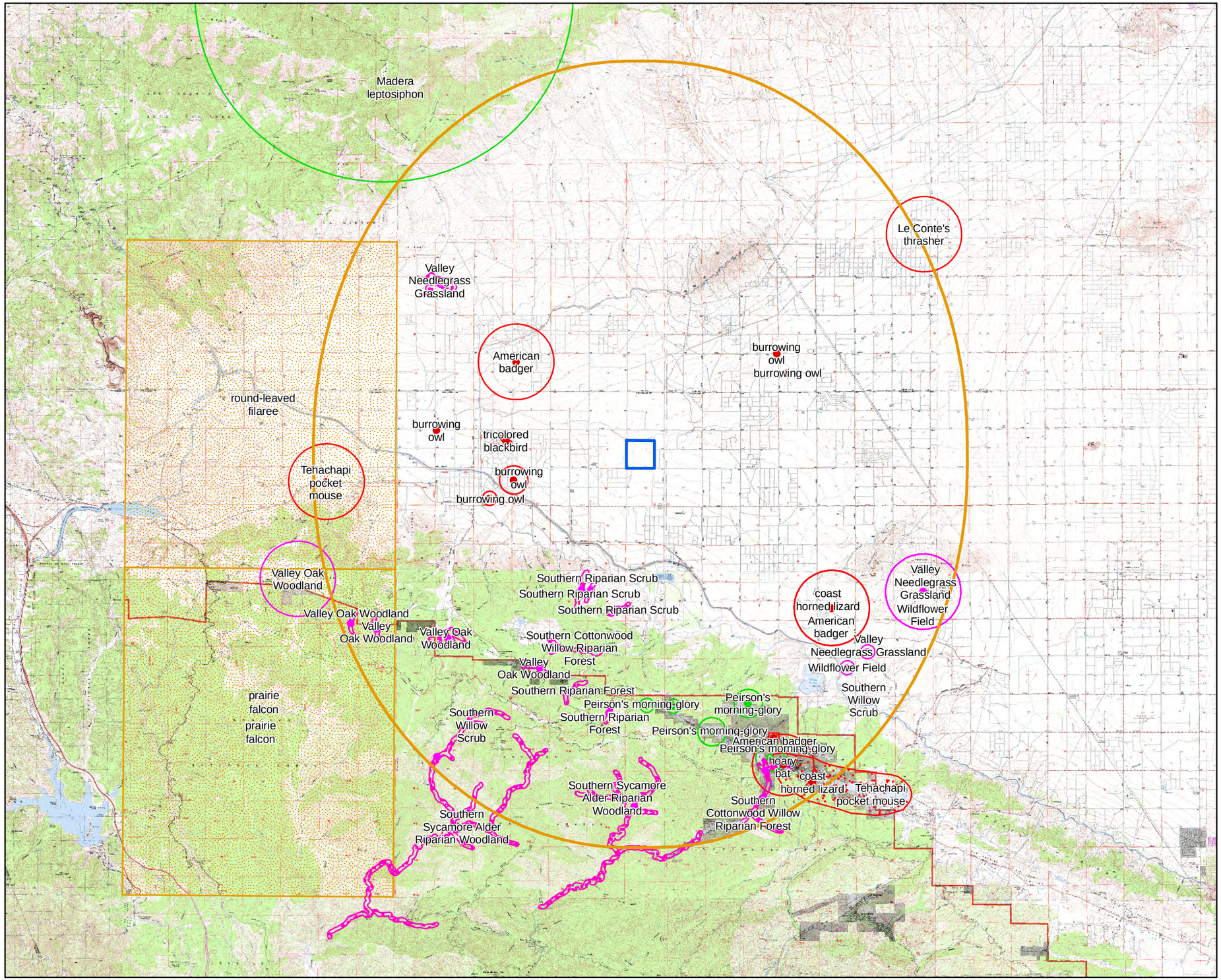
NRG ~ ALPINE

PRELIMINARY SITE PALN
TOWNSHIP 8 NORTH, RANGE 15 WEST
LOS ANGELES COUNTY, CALIFORNIA

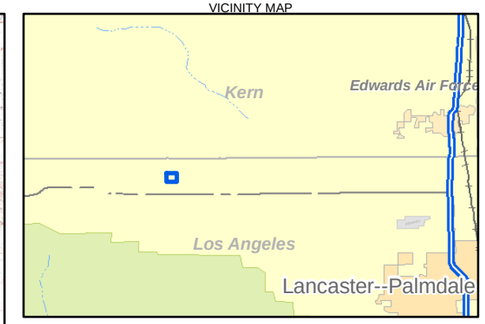
REVISIONS

NO	DESCRIPTION	BY	APPROVED	DATE

PREPARED FOR: ALTA VISTA SUNTOWER, LLC.
DRAWN BY: J.T.S. SCALE: 1" = 250' SHEET: 1 OF 1 C1
CHECKED BY: J.T.S. JOB NO: 093543
DISREGARD PRINTS BEARING EARLIER REVISION DATES 03-31-10



VICINITY MAP



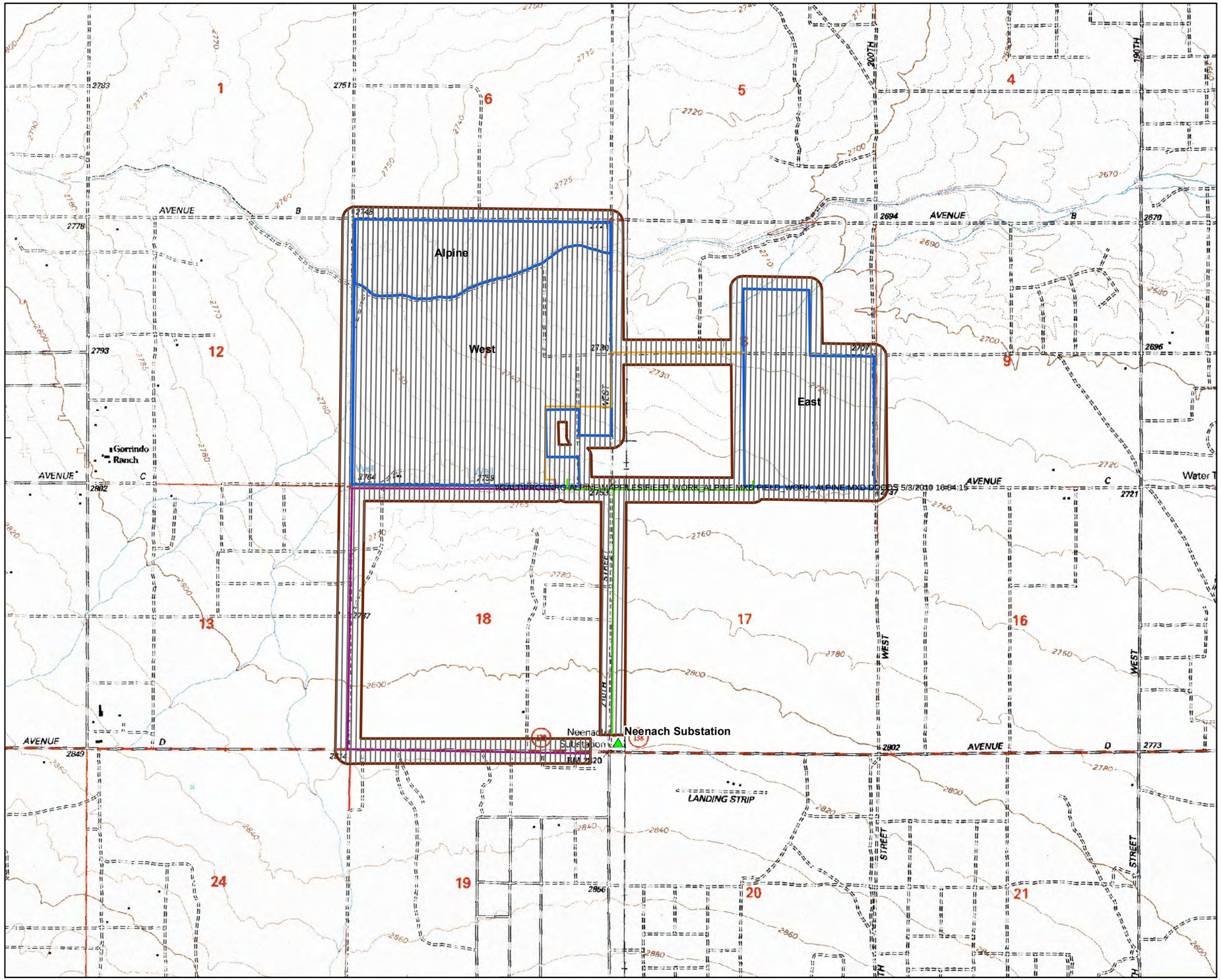
LEGEND

- Project Site
- Project Site Buffer - 10 miles
- Plant
- Animal
- Terr. Comm.
- Aqu. Comm.
- Plant (80m)
- Plant (specific)
- Plant (non-specific)
- Plant (circular)
- Animal (80m)
- Animal (specific)
- Animal (non-specific)
- Animal (circular)
- Terr. Comm. (80)
- Terr. Comm. (specific)
- Terr. Comm. (non-specific)
- Terr. Comm. (circular)
- Aqu. Comm. (80)
- Aqu. Comm. (specific)
- Aqu. Comm. (non-specfic)
- Aqu. Comm. (circular)
- Sensitive EO's (Commercial only)

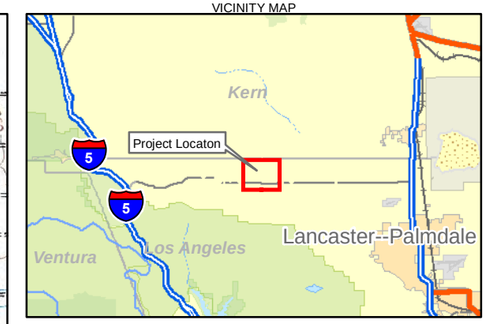
N

0 1 2
Miles

FIGURE X
CNDDB Species Occurrences, 10-Mile Radius
NRG Alpine Project



VICINITY MAP



LEGEND

- Substation
- Transects
- Preferred Interconnection Route
- Alternate Interconnection and Gen-tie Route
- Alternate Gen-tie Route
- Project Site
- Project Site and Transmission Line Easement (250 Foot Buffer)

N

0 1,000 2,000
Feet

Botanical Survey Area

Alpine Solar Generating Station

CH2MHILL

\\GALT\PROJ\NRG-ALPINE\MAPFILES\FIELD_WORK_ALPINE.MXD FIELD_WORK_ALPINE.MXD DDODS 5/3/2010 16:54:15

Appendix B – Agency Letters

U.S. FISH & WILDLIFE SERVICE

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
2008-SL-0368

April 18, 2008

Jina Sagar, Project Biologist
Tetra Tech EC, Inc.
1750 SW Harbor Way, Suite 400
Portland, Oregon 97201

Subject: Species List for Alta Vista Solar Generating Station, Lancaster, Los Angeles County, California

Dear Ms. Sagar:

This is in response to your letter dated February 27, 2008, which we received on March 6, 2008, requesting information on federally endangered and threatened species that may occur at the proposed Alta Vista Solar Generating Station and associated transmission line near Lancaster. The proposed solar project site is on a 388 acre parcel (APN 3256015016; T8N R15W S7). Based on review of our records and the proposed project location, we do not believe that the site could support any listed, proposed, or candidate species for which the U.S. Fish and Wildlife Service is responsible.

Only listed species receive protection under the Endangered Species Act of 1973, as amended. However, sensitive species should be considered in the planning process in the event they become listed or proposed for listing prior to project completion. We recommend that you review information in the California Department of Fish and Game's Natural Diversity Data Base. You can contact the California Department of Fish and Game at (916) 324-3812 for information on other sensitive species that may occur in this area.

We note that the proposed project may adversely affect migratory birds in the area. The U.S. Fish and Wildlife Service's responsibilities include management authority for migratory birds under the Migratory Bird Treaty Act of 1918, as amended (MBTA). The MBTA (16 U.S.C. 703-712) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. While the MBTA has no provision for allowing unauthorized take, we recognize that some birds may be killed at structures such as wind turbines even if all reasonable measures to avoid it are implemented. The Service's Division of Law Enforcement carries out its mission to protect migratory birds not only through investigations and enforcement, but through fostering relationships with individuals and industries that actively seek to eliminate their impacts on migratory birds. Although individuals or companies cannot be absolved from liability under the MBTA if

they follow these recommended guidelines, the Division of Law Enforcement and Department of Justice have used enforcement and prosecutorial discretion in the past regarding individuals or companies who have made good faith efforts to avoid the take of migratory birds.

If you have any questions regarding this matter, please contact Ray Bransfield at telephone (805) 644-1766, Extension 317.

Sincerely,

Carl T. Benz
Assistant Field Supervisor

"Kelly Schmoker" <KSchmoker@dfg.ca.gov>

04/07/2008 10:41 AM

To "Annette Tenneboe" <ATENNEBOE@dfg.ca.gov>, <Jina.Sagar@tteci.com>
cc "Helen Birss" <HBIRSS@dfg.ca.gov>, "Julie Vance" <JVANCE@dfg.ca.gov>, "Terri Dickerson" <TDICKERSON@dfg.ca.gov>, <Emily.Festger@tteci.com>
Subject Re: Fwd: Alta Vista AFC

Jina,
As I indicated to you over the phone, Region 5 is not able to provide the level of species account information you have requested for this large project. Please refer to our California Natural Diversity Database as a starting point to form a species list. Please keep in mind that this is only a positive sighting database, so if no surveys have been conducted in the area, there will be a lack of data. To help make your list more robust, we suggest using the 8 USGS quadrangles surrounding your project to give you a better potential species list. Additionally, contacting local herbaria, the CNPS rare plant inventory (WWW.CNPS.org) and local fauna experts can give you a better idea as to what is in the area. If you need assistance with contacts, I can suggest a few people. Additionally, using environmental documents that have been prepared in your project area is another good place to look.

Please call if you have any further questions,
Kelly

Kelly Schmoker
Staff Environmental Scientist
Dept. of Fish and Game
626-335-4369
147 W. Route 66, #508
Glendora, CA 91740

>>> Annette Tenneboe 4/7/2008 10:29 AM >>>
Jina,

Since you were not able to provide me with a copy of the CDFG letter from Region 5, I can only speculate on the Department's response. The Department of Fish and Game acts as a Responsible and Trustee Agency for the purpose of CEQA/CESA review. Researching and providing the amount of information that was requested in the attached letter would put the Department in the position of acting in the same capacity as a consultant for the benefit of the applicant of the proposed project. The difference between Regions is that Region 5 apparently provided a formal letter of response, and I responded briefly via email that I do not have the time or resources to invest in researching all of the information requested by Tetra Tech.

Annette Tenneboe
Environmental Scientist
California Department of Fish and Game
Central California Region
1234 East Shaw Avenue
Fresno, California 93710
office: (559) 243-4014 x 220

fax: (559) 243-4020
email: atenneboe@dfg.ca.gov

>>> <Jina.Sagar@tteci.com> 4/1/2008 11:56 AM >>>
Hello Annette--

I am following up on the information Emily Festeger gave me regarding her
CDFG contact. Here is the letter request I sent to Terri Dickerson, which
then went to Kelly Shmoker. I wanted to just understand how and if the
response letter varied by region. The letter also included two maps of the
project area and T-line. If you would like to see these please let me
know.

Thanks for clarifying,

Jina Sagar

Jina Sagar | Biologist
Direct: 503.721.7210 | Fax: 503.227.1287
jina.sagar@tteci.com

Tetra Tech EC, INC. |
1750 SW Harbor Way, Suite 400 | Portland, OR 97201 | www.tteci.com

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from your system.

Appendix C – CNDDB Results

Agelaius tricolor

tricolored blackbird

Element Code: ABPBXB0020

Status
Federal: None
State: None

NDDB Element Ranks
Global: G2G3
State: S2

Other Lists
CDFG Status: SC

Habitat Associations
General: HIGHLY COLONIAL SPECIES, MOST NUMBEROUS IN CENTRAL VALLEY & VICINITY. LARGELY ENDEMIC TO CALIFORNIA.
Micro: REQUIRES OPEN WATER, PROTECTED NESTING SUBSTRATE, & FORAGING AREA WITH INSECT PREY WITHIN A FEW KM OF THE COLONY.

Occurrence No. 400 **Map Index:** 55403 **EO Index:** 55403

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2000-04-22
Site: 2000-04-22
Record Last Updated: 2004-05-10

Quad Summary: Neenach School (3411875/188D)
County Summary: Los Angeles

Lat/Long: 34.79923º / -118.57496º
UTM: Zone-11 N3851909 E355925
Area:
Elevation: 2,893 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POLYGON

Township: 08N
Range: 16W
Section: 09 **Qtr:** NE
Meridian: S

Location: ALONG THE SHORE OF HOLIDAY LAKE. NORTH OF AVE B8, WEST OF 250TH ST W. ANTELOPE VALLEY
Ecological: HABITAT IS 75% CATTAIL AND 25% BULRUSH. MUCH VEGETATION HAS BEEN CLEARED.
General: POPULATION ESTIMATE OF 210 BIRDS.
Owner/Manager: UNKNOWN

Athene cunicularia

burrowing owl

Element Code: ABNSB10010

Status
Federal: None
State: None

NDDB Element Ranks
Global: G4
State: S2

Other Lists
CDFG Status: SC

Habitat Associations
General: OPEN, DRY ANNUAL OR PERENIAL GRASSLANDS, DESERTS & SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.
Micro: SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.

Occurrence No. 350 **Map Index:** 42520 **EO Index:** 42520
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-06-27
Site: 1999-06-27
Record Last Updated: 2000-07-12

Quad Summary: Neenach School (3411875/188D)
County Summary: Los Angeles

Lat/Long: 34.80308º / -118.60715º
UTM: Zone-11 N3852383 E352987
Radius: 80 meters
Elevation: 2,910 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 16W
Section: 08 **Qtr:** XX
Meridian: S

Location: SE OF THE INTERSECTION OF AVENUE B AND 270TH STREET WEST, ANTELOPE VALLEY.
Location Detail: BURROW IS LOCATED 20 FEET SOUTH OF THE INTERSECTION.
Ecological: HABITAT CONSISTS OF DESERT SCRUB AND OLD AGRICULTURAL FIELDS; A STAND OF JOSHUA TREES FOUND NEARBY.
General: MALE OBSERVED AT THE BURROW DURING APR & MAY, STARTING ON 16 APR 1999. FEMALE AND YOUNG OBSERVED ON 6 JUN 1999. 2 ADULTS AND 6 JUVENILES OBSERVED ON 27 JUN 1999.
Owner/Manager: PVT?

Occurrence No. 351 **Map Index:** 42522 **EO Index:** 42522
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-06-11
Site: 1999-06-11
Record Last Updated: 2000-03-13

Quad Summary: Neenach School (3411875/188D)
County Summary: Los Angeles

Lat/Long: 34.78435º / -118.57135º
UTM: Zone-11 N3850253 E356230
Radius: 2/5 mile
Elevation: 2,940 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 16W
Section: 15 **Qtr:** XX
Meridian: S

Location: 250TH STREET WEST, BETWEEN AVENUE C AND THE CALIFORNIA AQUEDUCT, ANTELOPE VALLEY
Ecological: HABITAT CONSISTS OF DESERT SCRUB AND OLD AGRICULTURAL FIELDS.
General: BURROW WITH FLEDGED YOUNG OBSERVED ON 11 JUN 1999.
Owner/Manager: UNKNOWN

Occurrence No. 352 **Map Index:** 42523 **EO Index:** 42523
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-03-26
Site: 1999-03-26
Record Last Updated: 2000-03-13

Quad Summary: Neenach School (3411875/188D)
County Summary: Los Angeles

Lat/Long: 34.77728º / -118.58243º
UTM: Zone-11 N3849485 E355204
Radius: 1/5 mile
Elevation: 3,000 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 16W
Section: 16 **Qtr:** XX
Meridian: S

Location: NORTH OF AVENUE D, NEAR 256TH STREET WEST, ANTELOPE VALLEY.
Ecological: HABITAT CONSISTS OF DESERT SCRUB AND OLD AGRICULTURAL FIELDS.
General: OCCUPIED BURROW OBSERVED ON 26 MAR 1999.
Owner/Manager: UNKNOWN

Athene cunicularia

burrowing owl

Element Code: ABNSB10010

Status
Federal: None
State: None

NDDB Element Ranks
Global: G4
State: S2

Other Lists
CDFG Status: SC

Habitat Associations
General: OPEN, DRY ANNUAL OR PERENIAL GRASSLANDS, DESERTS & SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.
Micro: SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.

Occurrence No. 985 **Map Index:** 69939 **EO Index:** 70770
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2007-09-11
Site: 2007-09-11
Record Last Updated: 2007-09-17

Quad Summary: Fairmont Butte (3411874/187C)
County Summary: Kern

Lat/Long: 34.82583º / -118.44481º
UTM: Zone-11 N3854680 E367874
Radius: 80 meters
Elevation: 2,635 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 15W
Section: 35 **Qtr:** SW
Meridian: S

Location: 0.5 MILE EAST OF 180TH STREET WEST AND 1 MILE NORTH OF WEST AVENUE A, 9 MILES WSW OF WILLOW SPRINGS.

Ecological: HABITAT CONSISTS OF FRESHLY-DISKED AGRICULTURAL FIELDS DOMINATED BY RUSSIAN THISTLE; OTHER NON-NATIVE WEEDS ALSO PRESENT ON PROJECT SITE. AG LAND TO THE NORTH & EAST, JOSHUA TREE & SALTBUSH SCRUB TO THE WEST & SOUTH.

General: 1 OWL OBSERVED UTILIZING A BURROW SITE ON 11 SEP 2007.

Owner/Manager: UNKNOWN

Occurrence No. 986 **Map Index:** 69941 **EO Index:** 70771
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2007-09-11
Site: 2007-09-11
Record Last Updated: 2007-09-17

Quad Summary: Fairmont Butte (3411874/187C)
County Summary: Kern

Lat/Long: 34.83305º / -118.44981º
UTM: Zone-11 N3855488 E367429
Radius: 80 meters
Elevation: 2,635 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 15W
Section: 34 **Qtr:** NE
Meridian: S

Location: SOUTH SIDE OF GASKELL ROAD, JUST WEST OF 180TH STREET WEST, 9.2 MILES WSW OF WILLOW SPRINGS.

Ecological: HABITAT CONSISTS OF FRESHLY-DISKED AGRICULTURAL FIELDS DOMINATED BY RUSSIAN THISTLE; OTHER NON-NATIVE WEEDS ALSO PRESENT ON PROJECT SITE. AG LAND TO THE NORTH & EAST, JOSHUA TREE & SALTBUSH SCRUB TO THE WEST & SOUTH.

General: 1 OWL OBSERVED UTILIZING A BURROW SITE ON 11 SEP 2007.

Owner/Manager: UNKNOWN

Calystegia peirsonii

Peirson's morning-glory

Element Code: PDCON040A0

Status	NDDB Element Ranks	Other Lists
Federal: None	**Global:** G3	**CNPS List:** 4.2
State: None	**State:** S3.2	

Habitat Associations

General: CHAPARRAL, COASTAL SCRUB, CHENOPOD SCRUB, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.

Micro: OFTEN IN DISTURBED AREAS OR ALONG ROADSIDES OR IN GRASSY, OPEN AREAS. 390-1470M.

Occurrence No. 3 **Map Index:** 01210 **EO Index:** 18563

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Decreasing

Dates Last Seen
Element: 1972-XX-XX
Site: 1979-06-12
Record Last Updated: 1989-08-11

Quad Summary: Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.69858º / -118.50925º
UTM: Zone-11 N3840654 E361769
Radius: 1/5 mile
Elevation: 3,800 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 07N
Range: 15W
Section: 18 **Qtr:** N
Meridian: S

Location: 0.1 MI SE OF PINE CYN FOREST STATION, W OF LAKE HUGHES, ALONG HWY N2.

Ecological: IN WOODLAND. ASSOCIATED WITH QUERCUS CHRYSOLEPIS, POISON OAK AND RHAMNUS CROCEA.

Threat: HEAVY GRAZING HAS ELIMINATED PLANT ABOVE FENCE LINE.

Owner/Manager: USFS-ANGELES NF

Occurrence No. 16 **Map Index:** 01386 **EO Index:** 18554

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1982-XX-XX
Site: 1982-XX-XX
Record Last Updated: 2007-09-11

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.69948º / -118.46240º
UTM: Zone-11 N3840691 E366061
Radius: 2/5 mile
Elevation: 4,000 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 07N
Range: 15W
Section: 15 **Qtr:** E
Meridian: S

Location: TROEDEL SPRINGS PLATEAU, PORTAL RIDGE.

Location Detail: MAPPED IN VICINITY OF TROEDEL SPRINGS; LOCATION VAGUE.

General: NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Occurrence No. 17 **Map Index:** 01262 **EO Index:** 18550

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1982-06-17
Site: 1982-06-17
Record Last Updated: 2007-09-10

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.69831º / -118.49703º
UTM: Zone-11 N3840607 E362888
Radius: 1/5 mile
Elevation: 3,800 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 07N
Range: 15W
Section: 17 **Qtr:** NW
Meridian: S

Location: 0.7 MI UP DIRT RD NORTH OF PINE CANYON RD, 0.3 TO 0.5 MI E OF REST AREA.

Ecological: IN LOOSE, LIGHT SOIL AND ROCKY OUTCROPS; ASSOCIATED WITH ERIOGONUM FASCICULATUM, YUCCA WHIPPLEI, QUERCUS DUMOSA, AVENA SP., AND CERCOCARPUS BETULOIDES.

General: EXCELLENT TO GOOD CONDITION IN 1982.

Owner/Manager: USFS-ANGELES NF

Calystegia peirsonii

Peirson's morning-glory

Element Code: PDCON040A0

Status	NDDB Element Ranks	Other Lists
Federal: None	**Global:** G3	**CNPS List:** 4.2
State: None	**State:** S3.2	

Habitat Associations

General: CHAPARRAL, COASTAL SCRUB, CHENOPOD SCRUB, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.

Micro: OFTEN IN DISTURBED AREAS OR ALONG ROADSIDES OR IN GRASSY, OPEN AREAS. 390-1470M.

Occurrence No. 28 **Map Index:** 01047 **EO Index:** 18540

Dates Last Seen
Element: 1982-XX-XX
Site: 1982-XX-XX
Record Last Updated: 2007-09-10

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.67891º / -118.45222º
UTM: Zone-11 N3838395 E366961
Radius: 2/5 mile
Elevation: 1,800 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 07N
Range: 15W
Section: 22 **Qtr:** SE
Meridian: S

Location: NEAR JCT LAKE HUGHES RD & ELIZABETH LAKE CANYON RD.

Owner/Manager: USFS-ANGELES NF

Occurrence No. 29 **Map Index:** 01019 **EO Index:** 12608

Dates Last Seen
Element: 1982-XX-XX
Site: 1982-XX-XX
Record Last Updated: 2007-09-10

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.68865º / -118.47912º
UTM: Zone-11 N3839512 E364512
Radius: 2/5 mile
Elevation: 2,000 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 07N
Range: 15W
Section: 16 **Qtr:** SW
Meridian: S

Location: 1.8 MI NW OF JCT OF LAKE HUGHES RD & ELIZABETH LAKE CANYON RD.

Owner/Manager: USFS-ANGELES NF

Lasiurus cinereus

hoary bat

Element Code: AMACC05030

Status
Federal: None
State: None

NDDB Element Ranks
Global: G5
State: S4?

Other Lists
CDFG Status:

Habitat Associations
General: PREFERS OPEN HABITATS OR HABITAT MOSAICS, WITH ACCESS TO TREES FOR COVER & OPEN AREAS OR HABITAT EDGES FOR FEEDING.
Micro: ROOSTS IN DENSE FOLIAGE OF MEDIUM TO LARGE TREES. FEEDS PRIMARILY ON MOTHS. REQUIRES WATER.

Occurrence No. 50 **Map Index:** 68504 **EO Index:** 68809

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1938-07-15
Site: 1938-07-15
Record Last Updated: 2007-03-16

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.67609º / -118.44615º
UTM: Zone-11 N3838075 E367513
Radius: 4/5 mile
Elevation:

Mapping Precision NON-SPECIFIC
Symbol Type: POINT

Township: 07N
Range: 15W
Section: 23 **Qtr:** XX
Meridian: S

Location: LAKE HUGHES.
Location Detail: EXACT LOCATION UNKNOWN. MAPPED AS BEST ESTIMATE AROUND COMMUNITY OF LAKE HUGHES.
General: 1 MALE SPECIMEN (LACM #5003) COLLECTED BY J. VON BLOEKER ON 15 JUL 1938.
Owner/Manager: UNKNOWN

Perognathus alticolus inexpectatus

Tehachapi pocket mouse

Element Code: AMAFD01082

Status
Federal: None
State: None

NDDB Element Ranks
Global: G1G2T1T2
State: S1S2

Other Lists
CDFG Status: SC

Habitat Associations
General: ARID ANNUAL GRASSLAND & DESERT SHRUB COMMUNITIES, BUT ALSO TAKEN IN FALLOW GRAIN FIELD & IN RUSSIAN THISTLE.
Micro: BURROWS FOR COVER & NESTING. AESTIVATES AND HIBERNATES DURING EXTREME WEATHER. FORAGES ON OPEN GROUND & UNDER SHRUBS.

Occurrence No. 18 **Map Index:** 65730 **EO Index:** 65809

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1965-05-08
Site: 1965-05-08
Record Last Updated: 2006-08-09

Quad Summary: La Liebre Ranch (3411876/188C)
County Summary: Los Angeles

Lat/Long: 34.78328º / -118.65792º
UTM: Zone-11 N3850262 E348306
Radius: 1 mile
Elevation: 3,000 ft

Mapping Precision NON-SPECIFIC
Symbol Type: POINT

Township: 08N
Range: 17W
Section: 14 **Qtr:** XX
Meridian: S

Location: ABOUT 5 ROAD MILES EAST OF QUAIL LAKE ALONG HWY 138.
Location Detail: LOCATION GIVEN ONLY AS "5 MI E QUAIL LAKE". MAPPED AT THE COORDINATES GIVEN BY MANIS WITH A LOCATION UNCERTAINTY OF 6 MILES.
General: LACM #48790 COLLECTED 8 MAY 1965 BY R. G. HANNUM.
Owner/Manager: UNKNOWN

Phrynosoma blainvillii

coast horned lizard

Element Code: ARACF12100

Status
Federal: None
State: None

NDDB Element Ranks
Global: G4G5
State: S3S4

Other Lists
CDFG Status: SC

Habitat Associations
General: FREQUENTS A WIDE VARIETY OF HABITATS, MOST COMMON IN LOWLANDS ALONG SANDY WASHES WITH SCATTERED LOW BUSHES.
Micro: OPEN AREAS FOR SUNNING, BUSHES FOR COVER, PATCHES OF LOOSE SOIL FOR BURIAL, & ABUNDANT SUPPLY OF ANTS & OTHER INSECTS.

Occurrence No. 157 **Map Index:** 01549 **EO Index:** 28059
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: XXXX-XX-XX
Site: XXXX-XX-XX
Record Last Updated: 1989-08-10

Quad Summary: Fairmont Butte (3411874/187C), Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.73609º / -118.42397º
UTM: Zone-11 N3844700 E369639
Radius: 1 mile
Elevation: 2,800 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 15W
Section: 36 **Qtr:** SW
Meridian: S

Location: FAIRMONT, 4 MI NNE OF LAKE HUGHES.
General: SDNHM SPECIMEN; DATE OF COLLECTION UNKNOWN.
Owner/Manager: UNKNOWN

Occurrence No. 458 **Map Index:** 46981 **EO Index:** 46981
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2001-09-27
Site: 2001-09-27
Record Last Updated: 2002-01-15

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.66957º / -118.43252º
UTM: Zone-11 N3837334 E368752
Radius: 80 meters
Elevation: 3,287 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 07N
Range: 15W
Section: 26 **Qtr:** NE
Meridian: S

Location: PAINTED TURTLE CAMP, LAKE HUGHES.
Ecological: HABITAT CONSISTS OF RECOVERING CHAPARRAL.
Threat: THREATENED BY OFF-ROAD VEHICLES.
General: 1 JUVENILE OBSERVED FORAGING IN OPEN CHAPARRAL ON 27 SEP 2001.
Owner/Manager: PVT

Southern Cottonwood Willow Riparian Forest

Element Code: CTT61330CA

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S3.2

Other Lists

Habitat Associations
General:
Micro:

Occurrence No. 37 **Map Index:** 01082 **EO Index:** 15813

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1978-09-19
Site: 1978-09-19
Record Last Updated: 1998-07-20

Quad Summary: Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.72079º / -118.55064º
UTM: Zone-11 N3843175 E358016
Area: 113.3 acres
Elevation: 3,760 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 07N
Range: 16W
Section: 02 **Qtr:** S
Meridian: S

Location: KINGS CANYON, WEST OF KINGS CYN RANCH FOR ABOUT 1.3 MI.
Location Detail: INTERPRETED FROM 1978 AERIAL PHOTOGRAPHS.
Ecological: UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO
General: FIELD VERIFICATION NEEDED.
Owner/Manager: UNKNOWN

Occurrence No. 38 **Map Index:** 01450 **EO Index:** 15811

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Decreasing

Dates Last Seen
Element: 1988-04-02
Site: 1988-04-02
Record Last Updated: 1998-07-20

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.66348º / -118.45549º
UTM: Zone-11 N3836688 E366637
Area: 200.9 acres
Elevation: 3,120 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 07N
Range: 15W
Section: 27 **Qtr:** E
Meridian: S

Location: ELIZABETH LAKE CANYON, FROM HUGHES LAKE D/S FOR ABOUT 1.5 MI, & TRIBUTARY.
Ecological: COTTONWOODS OVER WILLOW SEEN 1988. NO WATER IN STREAM ON DAY OF APRIL VISIT. WIESLANDER MAPPED
Threat: PEAR ORCHARDS ENCROACHING
General: THIS WAS OCC #038 OF CTT61330CA.
Owner/Manager: PVT IN USFS-ANGELES NF

Occurrence No. 39 **Map Index:** 01447 **EO Index:** 15812

Occ Rank: None
Origin: Natural/Native occurrence
Presence: Extirpated
Trend: Unknown

Dates Last Seen
Element: 1935-XX-XX
Site: 1988-04-02
Record Last Updated: 1998-07-20

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.67398º / -118.45439º
UTM: Zone-11 N3837852 E366755
Area: 63.1 acres
Elevation: 3,400 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 07N
Range: 15W
Section: 22 **Qtr:** SE
Meridian: S

Location: NORTH & WEST SHORE HUGHES LAKE & SURROUNDINGS.
Location Detail: ONCE CONTINUOUS W/ OCC 038.
Ecological: WIESLANDER MAPPED AS CLOSED CANOPY WILLOWS. POPULUS FREMONTII PRESENT BUT UNDERSTORY DEVELOPED. EXTIRPATED AS A NATURAL COMMUNITY.
General: THIS WAS OCC #39 OF CTT61330CA.
Owner/Manager: PVT

Southern Riparian Forest

Element Code: CTT61300CA

Status
Federal: None
State: None

NDDB Element Ranks
Global: G4
State: S4

Other Lists

Habitat Associations
General:
Micro:

Occurrence No. 14 **Map Index:** 01080 **EO Index:** 16035

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1978-09-19
Site: 1978-09-19
Record Last Updated: 1998-07-23

Quad Summary: Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.70338º / -118.54557º
UTM: Zone-11 N3841237 E358451
Area: 61.4 acres
Elevation: 4,170 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 07N
Range: 16W
Section: 11 **Qtr:** XX
Meridian: S

Location: HIDEWAY CANYON, FOR ABOUT 0.9 MI U/S (S) OF PINE CANYON RD.
Location Detail: BOUNDARY REPRESENTS EXTENT AS INTERPRETED FROM 1978 AERIAL PHOTOS.
Ecological: DENSE COVER. VEGETATION COMPOSITION UNKNOWN. UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO
General: NEEDS FIELD VISIT.
Owner/Manager: USFS-ANGELES NF

Occurrence No. 15 **Map Index:** 01150 **EO Index:** 16036

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1978-09-19
Site: 1978-09-19
Record Last Updated: 1989-08-10

Quad Summary: Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.69571º / -118.52674º
UTM: Zone-11 N3840360 E360162
Area: 37.7 acres
Elevation: 4,200 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 07N
Range: 16W
Section: 13 **Qtr:** E
Meridian: S

Location: SHAKE CANYON, BETWEEN UPPER & LOWER SHAKE CAMPGROUNDS.
Location Detail: INTERPRETED FROM 1978 AERIAL PHOTOS.
Ecological: VEGETATION COMPOSITION UNKNOWN. UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO
General: NEEDS FIELD VISIT.
Owner/Manager: USFS-ANGELES NF

Southern Riparian Scrub

Element Code: CTT63300CA

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S3.2

Other Lists

Habitat Associations
General:
Micro:

Occurrence No. 28 **Map Index:** 01096 **EO Index:** 15316

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1978-09-19
Site: 1978-09-19
Record Last Updated: 1998-07-23

Quad Summary: Neenach School (3411875/188D), Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.74258° / -118.53965°
UTM: Zone-11 N3845576 E359059
Area: 68.7 acres
Elevation: 3,360 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 08N
Range: 16W
Section: 35 **Qtr:** E
Meridian: S

Location: BALDWIN GRADE CANYON, EAST OF DANIELSON MOTORWAY.

Ecological: 1978 EXTENT MAPPED FROM INTERPRETATION OF AERIAL PHOTOGRAPHS. UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO

General: NEEDS FIELD VERIFICATION OF VEGETATION CONDITION, COMPOSITION.

Owner/Manager: UNKNOWN

Occurrence No. 29 **Map Index:** 01113 **EO Index:** 15314

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1978-09-19
Site: 1978-09-19
Record Last Updated: 1998-07-23

Quad Summary: Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.74261° / -118.53536°
UTM: Zone-11 N3845573 E359452
Area: 46.2 acres
Elevation: 3,400 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 08N
Range: 16W
Section: 36 **Qtr:** NW
Meridian: S

Location: UNNAMED CANYON TO E OF BALDWIN GRADE CYN, EAST OF DANIELSON MOTORWAY.

Ecological: 1978 EXTENT MAPPED FROM INTERPRETATION OF AERIAL PHOTOGRAPHS. UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO

General: NEEDS FIELD VERIFICATION OF VEGETATION CONDITION, COMPOSITION.

Owner/Manager: UNKNOWN

Occurrence No. 30 **Map Index:** 01161 **EO Index:** 15313

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1978-09-19
Site: 1978-09-19
Record Last Updated: 1998-07-23

Quad Summary: Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.73524° / -118.52275°
UTM: Zone-11 N3844738 E360594
Area: 44.9 acres
Elevation: 3,400 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 08N
Range: 16W
Section: 36 **Qtr:** SE
Meridian: S

Location: NORTH LONG CANYON, SOUTH OF LOS ANGELES AQUEDUCT.

Ecological: 1978 EXTENT MAPPED FROM INTERPRETATION OF AERIAL PHOTOGRAPHS. UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO

General: EXTENT MAPPED FROM INTERPRETATION OF AERIAL PHOTOGRAPHS.

Owner/Manager: UNKNOWN

Southern Sycamore Alder Riparian Woodland

Element Code: CTT62400CA

Status
Federal: None
State: None

NDDB Element Ranks
Global: G4
State: S4

Other Lists

Habitat Associations
General:
Micro:

Occurrence No. 95 **Map Index:** 01197 **EO Index:** 15459

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1978-09-19
Site: 1978-09-19
Record Last Updated: 1998-07-22

Quad Summary: Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.65990º / -118.51471º
UTM: Zone-11 N3836372 E361205
Area: 467.4 acres
Elevation: 3,080 ft

Mapping Precision SPECIFIC
Symbol Type: POLYGON

Township: 07N
Range: 15W
Section: 31 **Qtr:** NW
Meridian: S

Location: FISH CREEK, FROM "THE POTHOLES" D/S TO ELIZABETH LAKE CANYON.
Location Detail: MAPPED FROM INTERPRETATION OF AERIAL PHOTOS.
Ecological: LONG REACHES OF SCRUB W/CLOSED CANOPY QUERCUS AGRIFOLIA, ALNUS RHOMBIFOLIA & PLATANUS RACEMOSA.
General: THIS WAS OCC #095 OF CTT62400CA.
Owner/Manager: USFS-ANGELES NF

Southern Willow Scrub

Element Code: CTT63320CA

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S2.1

Other Lists

Habitat Associations
General:
Micro:

Occurrence No. 19 **Map Index:** 00901 **EO Index:** 15277

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1978-09-19
Site: 1978-09-19
Record Last Updated: 1998-07-21

Quad Summary: Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.67847º / -118.60593º
UTM: Zone-11 N3838561 E352878
Area: 305.1 acres
Elevation: 3,720 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 07N
Range: 16W
Section: XX **Qtr:** XX
Meridian: S

Location: FISH CANYON, N OF LITTLE BURNT PEAK D/S FOR ABOUT 3.5 MI.
Location Detail: MAPPED FROM INTERPRETATION OF AERIAL PHOTOS.
Ecological: WILLOW SCRUB WITH BACCHARIS VIMINEA, LEPIDOSPARTUM SQUAMATUM AND WIDELY SCATTERED PLATANUS RACEMOSA.
General: GROUND TRUTH NEEDED. THIS WAS OCC #019 OF CTT63320CA.
Owner/Manager: USFS-ANGELES NF

Occurrence No. 22 **Map Index:** 01613 **EO Index:** 15274

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1978-09-19
Site: 1978-09-19
Record Last Updated: 1998-07-21

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.70119º / -118.40966º
UTM: Zone-11 N3840811 E370895
Area: 28.5 acres
Elevation: 2,880 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 07N
Range: 14W
Section: 18 **Qtr:** NW
Meridian: S

Location: MYRICK CANYON, JUST EAST OF CALIFORNIA AQUEDUCT.
Location Detail: MAPPED FROM INTERPRETATION OF AERIAL PHOTOS.
Ecological: UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO
General: NEEDS FIELD VERIFICATION.
Owner/Manager: UNKNOWN

Taxidea taxus

American badger — **Element Code:** AMAJF04010

Status	NDDB Element Ranks	Other Lists
Federal: None	**Global:** G5	**CDFG Status:** SC
State: None	**State:** S4	

Habitat Associations

General: MOST ABUNDANT IN DRIER OPEN STAGES OF MOST SHRUB, FOREST, AND HERBACEOUS HABITATS, WITH FRIABLE SOILS.

Micro: NEEDS SUFFICIENT FOOD, FRIABLE SOILS & OPEN, UNCULTIVATED GROUND. PREYS ON BURROWING RODENTS. DIGS BURROWS.

Occurrence No. 26 **Map Index:** 56527 **EO Index:** 56543

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1988-05-16
Site: 1988-05-16
Record Last Updated: 2004-08-30

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.68657º / -118.45049º
UTM: Zone-11 N3839243 E367132
Area:
Elevation: 3,800 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POLYGON
Township: 07N
Range: 15W
Section: 22 **Qtr:** NE
Meridian: S

Location: 0.6 MILE NORTH OF LAKE HUGHES.

Ecological: HABITAT CONSISTS OF CHAPARRAL, DOMINATED BY ADENOSTOMA, ARCTOSTAPHYLOS, CEANOTHUS, CERCOCARPUS, AND PINUS COULTERI.

Threat: POSSIBLY THREATENED BY A WASTEWATER TREATMENT PLANT.

General: AN ACTIVE DEN WAS OBSERVED, 13-16 MAY 1988.

Owner/Manager: UNKNOWN

Occurrence No. 151 **Map Index:** 01549 **EO Index:** 56863

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1904-06-21
Site: 1904-06-21
Record Last Updated: 2004-09-20

Quad Summary: Fairmont Butte (3411874/187C), Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.73609º / -118.42397º
UTM: Zone-11 N3844700 E369639
Radius: 1 mile
Elevation: 2,800 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 15W
Section: 36 **Qtr:** SW
Meridian: S

Location: FAIRMONT, ANTELOPE VALLEY.

Location Detail: MAPPED ACCORDING TO LAT/LONG GIVEN BY MVZ; MAX ERROR DISTANCE: 1 KM.

General: MALE COLLECTED (MVZ #7077) BY JOSEPH GRINNELL ON 21 JUN 1904. 1 COLLECTED (DATE UNKNOWN), LACM.

Owner/Manager: UNKNOWN

Occurrence No. 334 **Map Index:** 57756 **EO Index:** 57772

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: XXXX-XX-XX
Site: XXXX-XX-XX
Record Last Updated: 2004-10-27

Quad Summary: Neenach School (3411875/188D)
County Summary: Kern, Los Angeles

Lat/Long: 34.82942º / -118.57052º
UTM: Zone-11 N3855251 E356383
Radius: 1 mile
Elevation:
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 16W
Section: 34 **Qtr:** XX
Meridian: S

Location: ANTELOPE VALLEY, NEAR NEENACH, KERN COUNTY.

Location Detail: AREA MAPPED IS IN THE VICINITY OF THE LOS ANGELES AQUEDUCT TO THE NORTH AND THE KERN COUNTY LINE TO THE SOUTH.

General: 1 COLLECTED, FMNH (FIELD MUSEUM OF NATURAL HISTORY, CHICAGO).

Owner/Manager: UNKNOWN

Valley Needlegrass Grassland

Element Code: CTT42110CA

Status
Federal: None
State: None

NDDB Element Ranks
Global: G1
State: S3.1

Other Lists

Habitat Associations
General:
Micro:

Occurrence No. 5 **Map Index:** 01705 **EO Index:** 13582

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1980-04-XX
Site: 1980-04-XX
Record Last Updated: 1998-07-15

Quad Summary: Del Sur (3411863/162A), Little Buttes (3411873/187D), Fairmont Butte (3411874/187C), Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.74248º / -118.38175º
UTM: Zone-11 N3845355 E373514
Radius: 1 mile
Elevation: 2,880 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 14W
Section: 32 **Qtr:** NE
Meridian: S

Location: ANTELOPE VALLEY CA POPPY RES. 2 MI E OF FAIRMONT ON LANCASTER AVE; ANTELOPE BUTTES.
Location Detail: TOP & SIDES OF BUTTES. MAPPED AS GENERAL DUE TO SIZE.
Ecological: NASSELLA COVERS (5-30%). SLOPE 5-80%. SANDY-GRAVELLY SOIL.
Threat: ADJ LAND IRRIGATED, BARLEY/ALFALFA. CA AQUEDUCT NEARBY.
General: FAIRLY UNDISTURBED. THIS WAS OCC #005 OF CTT42110CA.
Owner/Manager: DPR-ANTELOPE VALLEY CA POP RES

Occurrence No. 22 **Map Index:** 01627 **EO Index:** 19752

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1980-04-25
Site: 1980-04-25
Record Last Updated: 1998-07-15

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.71942º / -118.40731º
UTM: Zone-11 N3842830 E371139
Radius: 1/5 mile
Elevation: 2,900 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 07N
Range: 14W
Section: 06 **Qtr:** SW
Meridian: S

Location: SE OF FAIRMONT. E OF RD 160 ON STEEP SLOPES. S OF ANTELOPE VALLEY POPPY RESERVE.
Location Detail: S & E ASPECT.
Ecological: NASSELLA CERNUA DOM. SOIL SANDY, GRAVELLY, SLOPE 60-80%. ASSOC. SPP: POA SECUNDA VAR. SECUNDA, SITANION, BROMUS TECTORUM & B. RUBENS. ESCHSCHOLZIA ON BLUFFS ABOVE RAVINES.
Threat: DRY FARMING AND SOME IRRIGATION ON FLATS. AREA BISECTED BY RAVINES.
General: THIS WAS OCC #022 OF CTT42110CA.
Owner/Manager: UNKNOWN

Occurrence No. 57 **Map Index:** 24322 **EO Index:** 6457

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1992-04-09
Site: 1992-04-09
Record Last Updated: 1998-07-15

Quad Summary: Neenach School (3411875/188D)
County Summary: Kern

Lat/Long: 34.85879º / -118.60543º
UTM: Zone-11 N3858559 E353243
Area: 207.2 acres
Elevation: 3,360 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 09N
Range: 16W
Section: 19 **Qtr:** NE
Meridian: S

Location: WESTERN ANTELOPE VALLEY. 5 MILES DUE NORTH OF NEENACH SCHOOL AND HWY 138 BETWEEN 270TH AND 280TH STREETS.
Location Detail: SINGLE PATCH OF VEGETATION ON GRADUAL SOUTHWEST FACING SLOPE NEAR THE BASE OF THE BAJADA. SOUTH SLOPE OF THE TEHACHAPIS.
Ecological: SHRUB/PERENNIAL GRASS LAYER DOMINATED BY ACHNATHERUM SPECIOSUM (72%) WITH STEPHANOMERIA ALSO PRESENT. HERB LAYER INCLUDES ERODIUM CICUTARIUM, CAMISSONIA, ERIOGONUM, OENOTHERA DELTOIDES, BROMUS MADRITENSIS RUBENS.
Threat: POTENTIAL THREATS INCLUDE DEVELOPMENT AND CULTIVATION.
General: SOIL IS GRANITIC WITH SOME INDIVIDUAL MARBLE (DOLOMITE) STONES AND FINE ANGULAR DECOMPOSED GRANITE ON THE SURFACE. THIS WAS OCC #057 OF CTT42110CA.
Owner/Manager: PVT-TEJON RANCH CO

Valley Needlegrass Grassland

Element Code: CTT42110CA

Status

Federal: None
State: None

NDDB Element Ranks

Global: G1
State: S3.1

Other Lists

Habitat Associations

General:
Micro:

Valley Oak Woodland

Element Code: CTT71130CA

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S2.1

Other Lists

Habitat Associations
General:
Micro:

Occurrence No. 77 **Map Index:** 00897 **EO Index:** 12450

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1988-03-31
Site: 1988-03-31
Record Last Updated: 1998-07-31

Quad Summary: Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.72400º / -118.60150º
UTM: Zone-11 N3843603 E353364
Area: 191.4 acres
Elevation: 4,080 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 07N
Range: 16W
Section: 05 **Qtr:** W
Meridian: S

Location: N-FACING & NE-FACING HILLSIDE BETWEEN OAK FLAT & OAK GROVE CANYON, E OF PRATT CANYON.

Ecological: OPEN WOODLAND OF QUERCUS LOBATA AND PINUS SABINIANA WITH GRASS UNDERSTORY ACCORDING TO WIESLANDER SURVEY.

Threat: GRAZED BY CATTLE.

General: FIELD VERIFIED 1988. THIS WAS OCC #077 OF CTT71130CA.

Owner/Manager: UNKNOWN

Occurrence No. 80 **Map Index:** 00838 **EO Index:** 15109

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1988-04-01
Site: 1988-04-01
Record Last Updated: 1998-07-31

Quad Summary: Liebre Mtn. (3411866/163B)
County Summary: Los Angeles

Lat/Long: 34.72713º / -118.63416º
UTM: Zone-11 N3843999 E350379
Area: 58.9 acres
Elevation: 4,280 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 07N
Range: 17W
Section: 01 **Qtr:** XX
Meridian: S

Location: RICHARDSON CANYON, NEAR PINE GROVE RANCH.

Location Detail: HOLLAND, 1988 SAW SAME PLANT ASSEMBLAGE BUT MODIFIED BOUNDARY CONSIDERABLY.

Ecological: OPEN WOODLAND OF QUERCUS LOBATA AND PINUS SABINANA ACCORDING TO WIESLANDER SURVEY.

General: THIS WAS OCC #080 OF CTT71130CA.

Owner/Manager: USFS-ANGELES NF

Occurrence No. 81 **Map Index:** 00817 **EO Index:** 15108

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1988-04-01
Site: 1988-04-01
Record Last Updated: 1998-07-31

Quad Summary: Liebre Mtn. (3411866/163B)
County Summary: Los Angeles

Lat/Long: 34.72925º / -118.64631º
UTM: Zone-11 N3844252 E349271
Area: 36.4 acres
Elevation: 1,200 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 08N
Range: 17W
Section: XX **Qtr:** XX
Meridian: S

Location: INTERMITTENT STREAM ASSOC W/COW SPRING, SOUTH OF OAKDALE CANYON ROAD.

Ecological: OPEN WOODLAND OF QUERCUS LOBATA AND PINUS SABINIANA OVER ARTEMISIA TRIDENTATA ACCORDING TO WIESLANDER SURVEY. OPEN CANOPY QUERCUS LOBATA W/SCATTERED PINUS ABINANA PER HOLLAND, 1988.

General: THIS WAS OCC #081 OF CTT71130CA.

Owner/Manager: USFS-ANGELES NF

Valley Oak Woodland

Element Code: CTT71130CA

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S2.1

Other Lists

Habitat Associations
General:
Micro:

Occurrence No. 101 **Map Index:** 00690 **EO Index:** 13490

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1988-04-01
Site: 1988-04-01
Record Last Updated: 1998-07-31

Quad Summary: Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.71256° / -118.55870°
UTM: Zone-11 N3842273 E357264
Area: 84.9 acres
Elevation: 4,120 ft

Mapping Precision SPECIFIC
Symbol Type: POLYGON

Township: 08N
Range: 17W
Section: 32 **Qtr:** NW
Meridian: S

Location: VICINITY OF QUAIL LAKE FIRE STATION, EAST OF BALD MOUNTAIN.

Ecological: OPEN WOODLAND OF QUERCUS LOBATA WITH SCATTERED PINUS SABINIANA WITH GRASS UNDERSTORY ACCORDING TO WIESLANDER SURVEY, 1935 AND HOLLAND, 1988.

Threat: GRAZED BY CATTLE, 1988.

General: APPEARS TO BE PARTLY AN INHOLDING W/IN ANGELES NATIONAL FOREST. THIS WAS OCC #101 OF CTT71130CA.

Owner/Manager: UNKNOWN

Wildflower Field

Element Code: CTT42300CA

Status
Federal: None
State: None

NDDB Element Ranks
Global: G2
State: S2.2

Other Lists

Habitat Associations
General:
Micro:

Occurrence No. 1 **Map Index:** 01580 **EO Index:** 13322

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1980-04-25
Site: 1980-04-25
Record Last Updated: 1998-07-14

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.71331º / -118.41674º
UTM: Zone-11 N3842164 E370266
Radius: 1/5 mile
Elevation: 2,950 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 07N
Range: 15W
Section: 12 **Qtr:** NE
Meridian: S

Location: SE OF FAIRMONT. SE OF JCT CA AQUEDUCT & AVE H.

Ecological: ESCHSCHOLZIA CALIFORNICA IN DENSE STANDS ON LEVEL TERRAIN. SLOPE 0.10%, ASPECT VARIOUS. UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO.

Threat: SOME OF THE AREA HAS BEEN PLOWED.

Owner/Manager: UNKNOWN

Occurrence No. 2 **Map Index:** 01705 **EO Index:** 7494

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1980-04-XX
Site: 1980-04-XX
Record Last Updated: 1998-07-14

Quad Summary: Del Sur (3411863/162A), Little Buttes (3411873/187D), Fairmont Butte (3411874/187C), Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.74248º / -118.38175º
UTM: Zone-11 N3845355 E373514
Radius: 1 mile
Elevation: 2,880 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 14W
Section: 32 **Qtr:** NE
Meridian: S

Location: ANTELOPE VALLEY CA POPPY RES. 2 MI E OF FAIRMONT ON LANCASTER AVE; ANTELOPE BUTTES.

Location Detail: MAPPED AS GENERAL DUE TO SIZE.

Ecological: IN FLATS AT BASE OF BUTTES. SLOPE 0-5%. SANDY-GRAVELLY SOIL. UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO.

Threat: ADJ LAND IRRIGATED, BARLEY/ALFALFA. CA AQUEDUCT NEARBY.

Owner/Manager: DPR-ANTELOPE VALLEY CA POP RES

Agelaius tricolor

tricolored blackbird

Element Code: ABPBXB0020

Status
Federal: None
State: None

NDDB Element Ranks
Global: G2G3
State: S2

Other Lists
CDFG Status: SC

Habitat Associations
General: HIGHLY COLONIAL SPECIES, MOST NUMBEROUS IN CENTRAL VALLEY & VICINITY. LARGELY ENDEMIC TO CALIFORNIA.
Micro: REQUIRES OPEN WATER, PROTECTED NESTING SUBSTRATE, & FORAGING AREA WITH INSECT PREY WITHIN A FEW KM OF THE COLONY.

Occurrence No. 400 **Map Index:** 55403 **EO Index:** 55403

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2000-04-22
Site: 2000-04-22
Record Last Updated: 2004-05-10

Quad Summary: Neenach School (3411875/188D)
County Summary: Los Angeles

Lat/Long: 34.79923º / -118.57496º
UTM: Zone-11 N3851909 E355925
Area:
Elevation: 2,893 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POLYGON

Township: 08N
Range: 16W
Section: 09 **Qtr:** NE
Meridian: S

Location: ALONG THE SHORE OF HOLIDAY LAKE. NORTH OF AVE B8, WEST OF 250TH ST W. ANTELOPE VALLEY
Ecological: HABITAT IS 75% CATTAIL AND 25% BULRUSH. MUCH VEGETATION HAS BEEN CLEARED.
General: POPULATION ESTIMATE OF 210 BIRDS.
Owner/Manager: UNKNOWN

Athene cunicularia

burrowing owl

Element Code: ABNSB10010

Status
Federal: None
State: None

NDDB Element Ranks
Global: G4
State: S2

Other Lists
CDFG Status: SC

Habitat Associations
General: OPEN, DRY ANNUAL OR PERENIAL GRASSLANDS, DESERTS & SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.
Micro: SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.

Occurrence No. 350 **Map Index:** 42520 **EO Index:** 42520
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-06-27
Site: 1999-06-27
Record Last Updated: 2000-07-12

Quad Summary: Neenach School (3411875/188D)
County Summary: Los Angeles

Lat/Long: 34.80308º / -118.60715º
UTM: Zone-11 N3852383 E352987
Radius: 80 meters
Elevation: 2,910 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 16W
Section: 08 **Qtr:** XX
Meridian: S

Location: SE OF THE INTERSECTION OF AVENUE B AND 270TH STREET WEST, ANTELOPE VALLEY.
Location Detail: BURROW IS LOCATED 20 FEET SOUTH OF THE INTERSECTION.
Ecological: HABITAT CONSISTS OF DESERT SCRUB AND OLD AGRICULTURAL FIELDS; A STAND OF JOSHUA TREES FOUND NEARBY.
General: MALE OBSERVED AT THE BURROW DURING APR & MAY, STARTING ON 16 APR 1999. FEMALE AND YOUNG OBSERVED ON 6 JUN 1999. 2 ADULTS AND 6 JUVENILES OBSERVED ON 27 JUN 1999.
Owner/Manager: PVT?

Occurrence No. 351 **Map Index:** 42522 **EO Index:** 42522
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-06-11
Site: 1999-06-11
Record Last Updated: 2000-03-13

Quad Summary: Neenach School (3411875/188D)
County Summary: Los Angeles

Lat/Long: 34.78435º / -118.57135º
UTM: Zone-11 N3850253 E356230
Radius: 2/5 mile
Elevation: 2,940 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 16W
Section: 15 **Qtr:** XX
Meridian: S

Location: 250TH STREET WEST, BETWEEN AVENUE C AND THE CALIFORNIA AQUEDUCT, ANTELOPE VALLEY
Ecological: HABITAT CONSISTS OF DESERT SCRUB AND OLD AGRICULTURAL FIELDS.
General: BURROW WITH FLEDGED YOUNG OBSERVED ON 11 JUN 1999.
Owner/Manager: UNKNOWN

Occurrence No. 352 **Map Index:** 42523 **EO Index:** 42523
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-03-26
Site: 1999-03-26
Record Last Updated: 2000-03-13

Quad Summary: Neenach School (3411875/188D)
County Summary: Los Angeles

Lat/Long: 34.77728º / -118.58243º
UTM: Zone-11 N3849485 E355204
Radius: 1/5 mile
Elevation: 3,000 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 16W
Section: 16 **Qtr:** XX
Meridian: S

Location: NORTH OF AVENUE D, NEAR 256TH STREET WEST, ANTELOPE VALLEY.
Ecological: HABITAT CONSISTS OF DESERT SCRUB AND OLD AGRICULTURAL FIELDS.
General: OCCUPIED BURROW OBSERVED ON 26 MAR 1999.
Owner/Manager: UNKNOWN

Athene cunicularia

burrowing owl

Element Code: ABNSB10010

Status
Federal: None
State: None

NDDB Element Ranks
Global: G4
State: S2

Other Lists
CDFG Status: SC

Habitat Associations
General: OPEN, DRY ANNUAL OR PERENIAL GRASSLANDS, DESERTS & SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.
Micro: SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.

Occurrence No. 985 **Map Index:** 69939 **EO Index:** 70770
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2007-09-11
Site: 2007-09-11
Record Last Updated: 2007-09-17

Quad Summary: Fairmont Butte (3411874/187C)
County Summary: Kern

Lat/Long: 34.82583º / -118.44481º
UTM: Zone-11 N3854680 E367874
Radius: 80 meters
Elevation: 2,635 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 15W
Section: 35 **Qtr:** SW
Meridian: S

Location: 0.5 MILE EAST OF 180TH STREET WEST AND 1 MILE NORTH OF WEST AVENUE A, 9 MILES WSW OF WILLOW SPRINGS.

Ecological: HABITAT CONSISTS OF FRESHLY-DISKED AGRICULTURAL FIELDS DOMINATED BY RUSSIAN THISTLE; OTHER NON-NATIVE WEEDS ALSO PRESENT ON PROJECT SITE. AG LAND TO THE NORTH & EAST, JOSHUA TREE & SALTBUSH SCRUB TO THE WEST & SOUTH.

General: 1 OWL OBSERVED UTILIZING A BURROW SITE ON 11 SEP 2007.

Owner/Manager: UNKNOWN

Occurrence No. 986 **Map Index:** 69941 **EO Index:** 70771
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2007-09-11
Site: 2007-09-11
Record Last Updated: 2007-09-17

Quad Summary: Fairmont Butte (3411874/187C)
County Summary: Kern

Lat/Long: 34.83305º / -118.44981º
UTM: Zone-11 N3855488 E367429
Radius: 80 meters
Elevation: 2,635 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 15W
Section: 34 **Qtr:** NE
Meridian: S

Location: SOUTH SIDE OF GASKELL ROAD, JUST WEST OF 180TH STREET WEST, 9.2 MILES WSW OF WILLOW SPRINGS.

Ecological: HABITAT CONSISTS OF FRESHLY-DISKED AGRICULTURAL FIELDS DOMINATED BY RUSSIAN THISTLE; OTHER NON-NATIVE WEEDS ALSO PRESENT ON PROJECT SITE. AG LAND TO THE NORTH & EAST, JOSHUA TREE & SALTBUSH SCRUB TO THE WEST & SOUTH.

General: 1 OWL OBSERVED UTILIZING A BURROW SITE ON 11 SEP 2007.

Owner/Manager: UNKNOWN

California macrophylla

round-leaved filaree

Element Code: PDGER01070

Status	NDDB Element Ranks	Other Lists
Federal: None	**Global:** G3	**CNPS List:** 1B.1
State: None	**State:** S3.1	

Habitat Associations

General: CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.

Micro: CLAY SOILS. 15-1200M.

Occurrence No. 103 **Map Index:** 75412 **EO Index:** 76415

Dates Last Seen
Element: 2003-XX-XX
Site: 2003-XX-XX

*** SENSITIVE ***

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Record Last Updated: 2009-06-05

Quad Summary: La Liebre Ranch (3411876/188C)
County Summary: Kern

*** SENSITIVE ***

Lat/Long:
UTM:
Radius:
Elevation:
Mapping Precision:
Symbol Type:
Township:
Range:
Section:
Meridian:
Qtr:

Location: *SENSITIVE* Location information suppressed.

Location Detail: Please contact the California Natural Diversity Database, California Department of Fish and Game, for more information: (916) 324-3812.

Ecological: ALLUVIAL TERRACES WITH GENTLE TO MODERATE SLOPES. CRACKED CLAY SOILS. ASSOC WITH ACHYRACHAENA MOLLIS, MICROSERIS DOUGLASII, LAYIA, LUPINUS MICROCARPUS, ANCISTROCARPHUS FILAGINEUS, GUILLENIA LEMMONII, PHACELIA CILIATA, MONOLOPIA LANCEOLATA.

Threat: THREATENED BY EXOTIC PLANTS AND POSSBILE FUTURE CONSTRUCTION WORK.

Owner/Manager:

Calystegia peirsonii

Peirson's morning-glory

Element Code: PDCON040A0

Status	NDDB Element Ranks	Other Lists
Federal: None	**Global:** G3	**CNPS List:** 4.2
State: None	**State:** S3.2	

Habitat Associations

General: CHAPARRAL, COASTAL SCRUB, CHENOPOD SCRUB, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.

Micro: OFTEN IN DISTURBED AREAS OR ALONG ROADSIDES OR IN GRASSY, OPEN AREAS. 390-1470M.

Occurrence No. 3 **Map Index:** 01210 **EO Index:** 18563

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Decreasing

Dates Last Seen
Element: 1972-XX-XX
Site: 1979-06-12
Record Last Updated: 1989-08-11

Quad Summary: Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.69858º / -118.50925º
UTM: Zone-11 N3840654 E361769
Radius: 1/5 mile
Elevation: 3,800 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 07N
Range: 15W
Section: 18 **Qtr:** N
Meridian: S

Location: 0.1 MI SE OF PINE CYN FOREST STATION, W OF LAKE HUGHES, ALONG HWY N2.

Ecological: IN WOODLAND. ASSOCIATED WITH QUERCUS CHRYSOLEPIS, POISON OAK AND RHAMNUS CROCEA.

Threat: HEAVY GRAZING HAS ELIMINATED PLANT ABOVE FENCE LINE.

Owner/Manager: USFS-ANGELES NF

Occurrence No. 16 **Map Index:** 01386 **EO Index:** 18554

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1982-XX-XX
Site: 1982-XX-XX
Record Last Updated: 2007-09-11

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.69948º / -118.46240º
UTM: Zone-11 N3840691 E366061
Radius: 2/5 mile
Elevation: 4,000 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 07N
Range: 15W
Section: 15 **Qtr:** E
Meridian: S

Location: TROEDEL SPRINGS PLATEAU, PORTAL RIDGE.

Location Detail: MAPPED IN VICINITY OF TROEDEL SPRINGS; LOCATION VAGUE.

General: NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Occurrence No. 17 **Map Index:** 01262 **EO Index:** 18550

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1982-06-17
Site: 1982-06-17
Record Last Updated: 2007-09-10

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.69831º / -118.49703º
UTM: Zone-11 N3840607 E362888
Radius: 1/5 mile
Elevation: 3,800 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 07N
Range: 15W
Section: 17 **Qtr:** NW
Meridian: S

Location: 0.7 MI UP DIRT RD NORTH OF PINE CANYON RD, 0.3 TO 0.5 MI E OF REST AREA.

Ecological: IN LOOSE, LIGHT SOIL AND ROCKY OUTCROPS; ASSOCIATED WITH ERIOGONUM FASCICULATUM, YUCCA WHIPPLEI, QUERCUS DUMOSA, AVENA SP., AND CERCOCARPUS BETULOIDES.

General: EXCELLENT TO GOOD CONDITION IN 1982.

Owner/Manager: USFS-ANGELES NF

Calystegia peirsonii

Peirson's morning-glory

Element Code: PDCON040A0

Status	NDDB Element Ranks	Other Lists
Federal: None	**Global:** G3	**CNPS List:** 4.2
State: None	**State:** S3.2	

Habitat Associations

General: CHAPARRAL, COASTAL SCRUB, CHENOPOD SCRUB, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.

Micro: OFTEN IN DISTURBED AREAS OR ALONG ROADSIDES OR IN GRASSY, OPEN AREAS. 390-1470M.

Occurrence No. 28 **Map Index:** 01047 **EO Index:** 18540

Dates Last Seen
Element: 1982-XX-XX
Site: 1982-XX-XX
Record Last Updated: 2007-09-10

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.67891º / -118.45222º
UTM: Zone-11 N3838395 E366961
Radius: 2/5 mile
Elevation: 1,800 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 07N
Range: 15W
Section: 22 **Qtr:** SE
Meridian: S

Location: NEAR JCT LAKE HUGHES RD & ELIZABETH LAKE CANYON RD.

Owner/Manager: USFS-ANGELES NF

Occurrence No. 29 **Map Index:** 01019 **EO Index:** 12608

Dates Last Seen
Element: 1982-XX-XX
Site: 1982-XX-XX
Record Last Updated: 2007-09-10

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.68865º / -118.47912º
UTM: Zone-11 N3839512 E364512
Radius: 2/5 mile
Elevation: 2,000 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 07N
Range: 15W
Section: 16 **Qtr:** SW
Meridian: S

Location: 1.8 MI NW OF JCT OF LAKE HUGHES RD & ELIZABETH LAKE CANYON RD.

Owner/Manager: USFS-ANGELES NF

Falco mexicanus

prairie falcon

Element Code: ABNKD06090

Status	NDDB Element Ranks	Other Lists
Federal: None	**Global:** G5	**CDFG Status:**
State: None	**State:** S3	

Habitat Associations

General: INHABITS DRY, OPEN TERRAIN, EITHER LEVEL OR HILLY.

Micro: BREEDING SITES LOCATED ON CLIFFS. FORAGES FAR AFIELD, EVEN TO MARSHLANDS AND OCEAN SHORES.

Occurrence No. 239 **Map Index:** 00792 **EO Index:** 26173

Dates Last Seen
Element: 1980-05-29
Site: 1980-05-29
Record Last Updated: 1989-08-10

*** SENSITIVE ***

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Quad Summary: Liebre Mtn. (3411866/163B)
County Summary: Los Angeles

*** SENSITIVE ***

Lat/Long:
UTM:
Radius:
Elevation:
Mapping Precision:
Symbol Type:
Township:
Range:
Section:
Meridian:
Qtr:

Location: *SENSITIVE* Location information suppressed.
Location Detail: Please contact the California Natural Diversity Database, California Department of Fish and Game, for more information: (916) 324-3812.

Owner/Manager:

Occurrence No. 240 **Map Index:** 00764 **EO Index:** 26172

Dates Last Seen
Element: 1980-06-02
Site: 1980-06-02
Record Last Updated: 1989-08-10

*** SENSITIVE ***

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Quad Summary: Liebre Mtn. (3411866/163B)
County Summary: Los Angeles

*** SENSITIVE ***

Lat/Long:
UTM:
Radius:
Elevation:
Mapping Precision:
Symbol Type:
Township:
Range:
Section:
Meridian:
Qtr:

Location: *SENSITIVE* Location information suppressed.
Location Detail: Please contact the California Natural Diversity Database, California Department of Fish and Game, for more information: (916) 324-3812.

Owner/Manager:

Lasiurus cinereus

hoary bat

Element Code: AMACC05030

Status	NDDB Element Ranks	Other Lists
Federal: None	**Global:** G5	**CDFG Status:**
State: None	**State:** S4?	

Habitat Associations

General: PREFERS OPEN HABITATS OR HABITAT MOSAICS, WITH ACCESS TO TREES FOR COVER & OPEN AREAS OR HABITAT EDGES FOR FEEDING.

Micro: ROOSTS IN DENSE FOLIAGE OF MEDIUM TO LARGE TREES. FEEDS PRIMARILY ON MOTHS. REQUIRES WATER.

Occurrence No. 50 **Map Index:** 68504 **EO Index:** 68809

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1938-07-15
Site: 1938-07-15
Record Last Updated: 2007-03-16

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.67609º / -118.44615º
UTM: Zone-11 N3838075 E367513
Radius: 4/5 mile
Elevation:

Mapping Precision NON-SPECIFIC
Symbol Type: POINT

Township: 07N
Range: 15W
Section: 23 **Qtr:** XX
Meridian: S

Location: LAKE HUGHES.

Location Detail: EXACT LOCATION UNKNOWN. MAPPED AS BEST ESTIMATE AROUND COMMUNITY OF LAKE HUGHES.

General: 1 MALE SPECIMEN (LACM #5003) COLLECTED BY J. VON BLOEKER ON 15 JUL 1938.

Owner/Manager: UNKNOWN

Leptosiphon serrulatus

Madera leptosiphon

Element Code: PDPLM09130

Status
Federal: None
State: None

NDDB Element Ranks
Global: G1?
State: S1?

Other Lists
CNPS List: 1B.2

Habitat Associations
General: CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.
Micro: DRY SLOPES; OFTEN ON DECOMPOSED GRANITE IN WOODLAND. 80-1575M.

Occurrence No. 22 **Map Index:** 74657 **EO Index:** 75589

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1935-05-20
Site: 1935-05-20
Record Last Updated: 2009-04-20

Quad Summary: Liebre Twins (3411885/188A), Cummings Mtn. (3511815/213D), Tejon Ranch (3511816/213C), Winters Ridge (3411886/188B)
County Summary: Kern

Lat/Long: 34.96987º / -118.63274º
UTM: Zone-11 N3870920 E350948
Radius: 5 mile
Elevation: 1,000 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POINT

Township: 10N
Range: 16W
Section: 07 **Qtr:** XX
Meridian: S

Location: TEHACHAPI MOUNTAINS.

Location Detail: EXACT LOCATION UNKNOWN. MAPPED BY CNDDB AS BEST GUESS TO ENCOMPASS TEHACHAPI MOUNTAINS; THIS IS A LARGE AREA AND NO ADDITIONAL INFORMATION WAS GIVEN ON HERBARIUM LABEL TO NARROW DOWN WHERE IN THE TEHACHAPI MTNS THIS PLANT OCCURS.

Ecological: N SLOPE AMONG SCATTERED OAKS.

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1935 ANDERSON COLLECTION. THIS IS A SOUTHERLY EXTENSION OF THE KNOWN RANGE OF THE PLANT; ID SHOULD BE DOUBLE-CHECKED, ANNOTATED IN 1941 BY MASON AS L. SERRULATUS. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Perognathus alticolus inexpectatus

Tehachapi pocket mouse

Element Code: AMAFD01082

Status
Federal: None
State: None

NDDB Element Ranks
Global: G1G2T1T2
State: S1S2

Other Lists
CDFG Status: SC

Habitat Associations
General: ARID ANNUAL GRASSLAND & DESERT SHRUB COMMUNITIES, BUT ALSO TAKEN IN FALLOW GRAIN FIELD & IN RUSSIAN THISTLE.
Micro: BURROWS FOR COVER & NESTING. AESTIVATES AND HIBERNATES DURING EXTREME WEATHER. FORAGES ON OPEN GROUND & UNDER SHRUBS.

Occurrence No. 10 **Map Index:** 59036 **EO Index:** 23897

Occ Rank: None
Origin: Natural/Native occurrence
Presence: Possibly Extirpated
Trend: Unknown

Dates Last Seen
Element: 1938-07-16
Site: 1981-07-24
Record Last Updated: 2006-08-07

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.66906º / -118.42287º
UTM: Zone-11 N3837265 E369635
Area:
Elevation: 3,400 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POLYGON

Township: 07N
Range: 15W
Section: 25 **Qtr:** XX
Meridian: S

Location: VICINITY OF ELIZABETH LAKE & HUGHES LAKE.
Location Detail: IN 1981, SULENTICH TRAPPED 0.25 MI NE LAKE HUGHES AT 3375 FT AND HAD NO SUCCESS. ALSO NO SUCCESS 200 M NORTH OF WEST END LAKE ELIZABETH AT 3400 FT.
General: LACM # 5017-5019 COLLECTED 15 JULY TO 16 JULY 1938 FROM ELIZABETH LAKE AND # 5020 COLLECTED 14 JULY 1938 FROM HUGHES LAKE.
Owner/Manager: USFS-ANGELES NF, PVT

Occurrence No. 18 **Map Index:** 65730 **EO Index:** 65809

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1965-05-08
Site: 1965-05-08
Record Last Updated: 2006-08-09

Quad Summary: La Liebre Ranch (3411876/188C)
County Summary: Los Angeles

Lat/Long: 34.78328º / -118.65792º
UTM: Zone-11 N3850262 E348306
Radius: 1 mile
Elevation: 3,000 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POINT

Township: 08N
Range: 17W
Section: 14 **Qtr:** XX
Meridian: S

Location: ABOUT 5 ROAD MILES EAST OF QUAIL LAKE ALONG HWY 138.
Location Detail: LOCATION GIVEN ONLY AS "5 MI E QUAIL LAKE". MAPPED AT THE COORDINATES GIVEN BY MANIS WITH A LOCATION UNCERTAINTY OF 6 MILES.
General: LACM #48790 COLLECTED 8 MAY 1965 BY R. G. HANNUM.
Owner/Manager: UNKNOWN

Phrynosoma blainvillii

coast horned lizard

Element Code: ARACF12100

Status
Federal: None
State: None

NDDB Element Ranks
Global: G4G5
State: S3S4

Other Lists
CDFG Status: SC

Habitat Associations
General: FREQUENTS A WIDE VARIETY OF HABITATS, MOST COMMON IN LOWLANDS ALONG SANDY WASHES WITH SCATTERED LOW BUSHES.
Micro: OPEN AREAS FOR SUNNING, BUSHES FOR COVER, PATCHES OF LOOSE SOIL FOR BURIAL, & ABUNDANT SUPPLY OF ANTS & OTHER INSECTS.

Occurrence No. 157 **Map Index:** 01549 **EO Index:** 28059
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: XXXX-XX-XX
Site: XXXX-XX-XX
Record Last Updated: 1989-08-10

Quad Summary: Fairmont Butte (3411874/187C), Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.73609º / -118.42397º
UTM: Zone-11 N3844700 E369639
Radius: 1 mile
Elevation: 2,800 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 15W
Section: 36 **Qtr:** SW
Meridian: S

Location: FAIRMONT, 4 MI NNE OF LAKE HUGHES.
General: SDNHM SPECIMEN; DATE OF COLLECTION UNKNOWN.
Owner/Manager: UNKNOWN

Occurrence No. 458 **Map Index:** 46981 **EO Index:** 46981
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2001-09-27
Site: 2001-09-27
Record Last Updated: 2002-01-15

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.66957º / -118.43252º
UTM: Zone-11 N3837334 E368752
Radius: 80 meters
Elevation: 3,287 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 07N
Range: 15W
Section: 26 **Qtr:** NE
Meridian: S

Location: PAINTED TURTLE CAMP, LAKE HUGHES.
Ecological: HABITAT CONSISTS OF RECOVERING CHAPARRAL.
Threat: THREATENED BY OFF-ROAD VEHICLES.
General: 1 JUVENILE OBSERVED FORAGING IN OPEN CHAPARRAL ON 27 SEP 2001.
Owner/Manager: PVT

Southern Cottonwood Willow Riparian Forest

Element Code: CTT61330CA

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S3.2

Other Lists

Habitat Associations
General:
Micro:

Occurrence No. 36 **Map Index:** 01077 **EO Index:** 15815

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1988-04-02
Site: 1988-04-02
Record Last Updated: 1998-07-20

Quad Summary: Warm Springs Mountain (3411855/163D), Lake Hughes (3411864/162B), Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.63591º / -118.52912º
UTM: Zone-11 N3833731 E359843
Area: 380.5 acres
Elevation: 2,200 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 06N
Range: 16W
Section: XX **Qtr:** XX
Meridian: S

Location: ELIZABETH LAKE CANYON, FROM NEAR DEER CYN D/S TO PROSPECT CREEK.

Ecological: ALNUS RHOMBIFOLIA ALONG FLOWING CR; SCATTERED POPULUS FREMONTII OVER BACCHARIS VIMINEA ON FLOODPLAIN. SYCAMORES AND ALDERS FOR SHORT WAY D/S OF FISH CYN. QUERCUS AGRIFOLIA AT OUTER FLOODPLAIN EDGES BELOW RED FOX CYN.

Threat: RIPRAP ON N SHORE FOR 1/2 MI BELOW CAMPGROUND. WIESLANDER/HOLLAND MAPS SIMILIAR.

General: THIS WAS OCC #036 OF CTT61330CA.

Owner/Manager: USFS-ANGELES NF

Occurrence No. 37 **Map Index:** 01082 **EO Index:** 15813

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1978-09-19
Site: 1978-09-19
Record Last Updated: 1998-07-20

Quad Summary: Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.72079º / -118.55064º
UTM: Zone-11 N3843175 E358016
Area: 113.3 acres
Elevation: 3,760 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 07N
Range: 16W
Section: 02 **Qtr:** S
Meridian: S

Location: KINGS CANYON, WEST OF KINGS CYN RANCH FOR ABOUT 1.3 MI.

Location Detail: INTERPRETED FROM 1978 AERIAL PHOTOGRAPHS.

Ecological: UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO

General: FIELD VERIFICATION NEEDED.

Owner/Manager: UNKNOWN

Occurrence No. 38 **Map Index:** 01450 **EO Index:** 15811

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Decreasing

Dates Last Seen
Element: 1988-04-02
Site: 1988-04-02
Record Last Updated: 1998-07-20

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.66348º / -118.45549º
UTM: Zone-11 N3836688 E366637
Area: 200.9 acres
Elevation: 3,120 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 07N
Range: 15W
Section: 27 **Qtr:** E
Meridian: S

Location: ELIZABETH LAKE CANYON, FROM HUGHES LAKE D/S FOR ABOUT 1.5 MI, & TRIBUTARY.

Ecological: COTTONWOODS OVER WILLOW SEEN 1988. NO WATER IN STREAM ON DAY OF APRIL VISIT. WIESLANDER MAPPED

Threat: PEAR ORCHARDS ENCROACHING

General: THIS WAS OCC #038 OF CTT61330CA.

Owner/Manager: PVT IN USFS-ANGELES NF

Southern Cottonwood Willow Riparian Forest

Element Code: CTT61330CA

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S3.2

Other Lists

Habitat Associations
General:
Micro:

Occurrence No. 39 **Map Index:** 01447 **EO Index:** 15812

Occ Rank: None
Origin: Natural/Native occurrence
Presence: Extirpated
Trend: Unknown

Dates Last Seen
Element: 1935-XX-XX
Site: 1988-04-02
Record Last Updated: 1998-07-20

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.67398º / -118.45439º
UTM: Zone-11 N3837852 E366755
Area: 63.1 acres
Elevation: 3,400 ft

Mapping PrecisionSPECIFIC
Symbol Type:POLYGON

Township: 07N
Range: 15W
Section: 22 **Qtr:** SE
Meridian: S

Location: NORTH & WEST SHORE HUGHES LAKE & SURROUNDINGS.

Location Detail: ONCE CONTINUOUS W/ OCC 038.

Ecological: WIESLANDER MAPPED AS CLOSED CANOPY WILLOWS. POPULUS FREMONTII PRESENT BUT UNDERSTORY DEVELOPED. EXTIRPATED AS A NATURAL COMMUNITY.

General: THIS WAS OCC #39 OF CTT61330CA.

Owner/Manager: PVT

Southern Riparian Forest

Element Code: CTT61300CA

Status
Federal: None
State: None

NDDB Element Ranks
Global: G4
State: S4

Other Lists

Habitat Associations
General:
Micro:

Occurrence No. 14 **Map Index:** 01080 **EO Index:** 16035

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1978-09-19
Site: 1978-09-19
Record Last Updated: 1998-07-23

Quad Summary: Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.70338º / -118.54557º
UTM: Zone-11 N3841237 E358451
Area: 61.4 acres
Elevation: 4,170 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 07N
Range: 16W
Section: 11 **Qtr:** XX
Meridian: S

Location: HIDEWAY CANYON, FOR ABOUT 0.9 MI U/S (S) OF PINE CANYON RD.
Location Detail: BOUNDARY REPRESENTS EXTENT AS INTERPRETED FROM 1978 AERIAL PHOTOS.
Ecological: DENSE COVER. VEGETATION COMPOSITION UNKNOWN. UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO
General: NEEDS FIELD VISIT.
Owner/Manager: USFS-ANGELES NF

Occurrence No. 15 **Map Index:** 01150 **EO Index:** 16036

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1978-09-19
Site: 1978-09-19
Record Last Updated: 1989-08-10

Quad Summary: Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.69571º / -118.52674º
UTM: Zone-11 N3840360 E360162
Area: 37.7 acres
Elevation: 4,200 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 07N
Range: 16W
Section: 13 **Qtr:** E
Meridian: S

Location: SHAKE CANYON, BETWEEN UPPER & LOWER SHAKE CAMPGROUNDS.
Location Detail: INTERPRETED FROM 1978 AERIAL PHOTOS.
Ecological: VEGETATION COMPOSITION UNKNOWN. UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO
General: NEEDS FIELD VISIT.
Owner/Manager: USFS-ANGELES NF

Southern Riparian Scrub

Element Code: CTT63300CA

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S3.2

Other Lists

Habitat Associations
General:
Micro:

Occurrence No. 28 **Map Index:** 01096 **EO Index:** 15316

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1978-09-19
Site: 1978-09-19
Record Last Updated: 1998-07-23

Quad Summary: Neenach School (3411875/188D), Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.74258° / -118.53965°
UTM: Zone-11 N3845576 E359059
Area: 68.7 acres
Elevation: 3,360 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 08N
Range: 16W
Section: 35 **Qtr:** E
Meridian: S

Location: BALDWIN GRADE CANYON, EAST OF DANIELSON MOTORWAY.

Ecological: 1978 EXTENT MAPPED FROM INTERPRETATION OF AERIAL PHOTOGRAPHS. UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO

General: NEEDS FIELD VERIFICATION OF VEGETATION CONDITION, COMPOSITION.

Owner/Manager: UNKNOWN

Occurrence No. 29 **Map Index:** 01113 **EO Index:** 15314

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1978-09-19
Site: 1978-09-19
Record Last Updated: 1998-07-23

Quad Summary: Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.74261° / -118.53536°
UTM: Zone-11 N3845573 E359452
Area: 46.2 acres
Elevation: 3,400 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 08N
Range: 16W
Section: 36 **Qtr:** NW
Meridian: S

Location: UNNAMED CANYON TO E OF BALDWIN GRADE CYN, EAST OF DANIELSON MOTORWAY.

Ecological: 1978 EXTENT MAPPED FROM INTERPRETATION OF AERIAL PHOTOGRAPHS. UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO

General: NEEDS FIELD VERIFICATION OF VEGETATION CONDITION, COMPOSITION.

Owner/Manager: UNKNOWN

Occurrence No. 30 **Map Index:** 01161 **EO Index:** 15313

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1978-09-19
Site: 1978-09-19
Record Last Updated: 1998-07-23

Quad Summary: Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.73524° / -118.52275°
UTM: Zone-11 N3844738 E360594
Area: 44.9 acres
Elevation: 3,400 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 08N
Range: 16W
Section: 36 **Qtr:** SE
Meridian: S

Location: NORTH LONG CANYON, SOUTH OF LOS ANGELES AQUEDUCT.

Ecological: 1978 EXTENT MAPPED FROM INTERPRETATION OF AERIAL PHOTOGRAPHS. UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO

General: EXTENT MAPPED FROM INTERPRETATION OF AERIAL PHOTOGRAPHS.

Owner/Manager: UNKNOWN

Southern Sycamore Alder Riparian Woodland

Element Code: CTT62400CA

Status
Federal: None
State: None

NDDB Element Ranks
Global: G4
State: S4

Other Lists

Habitat Associations
General:
Micro:

Occurrence No. 95 **Map Index:** 01197 **EO Index:** 15459

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1978-09-19
Site: 1978-09-19
Record Last Updated: 1998-07-22

Quad Summary: Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.65990º / -118.51471º
UTM: Zone-11 N3836372 E361205
Area: 467.4 acres
Elevation: 3,080 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 07N
Range: 15W
Section: 31 **Qtr:** NW
Meridian: S

Location: FISH CREEK, FROM "THE POTHOLES" D/S TO ELIZABETH LAKE CANYON.
Location Detail: MAPPED FROM INTERPRETATION OF AERIAL PHOTOS.
Ecological: LONG REACHES OF SCRUB W/CLOSED CANOPY QUERCUS AGRIFOLIA, ALNUS RHOMBIFOLIA & PLATANUS RACEMOSA.
General: THIS WAS OCC #095 OF CTT62400CA.
Owner/Manager: USFS-ANGELES NF

Occurrence No. 102 **Map Index:** 00833 **EO Index:** 15454

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1978-09-19
Site: 1978-09-19
Record Last Updated: 1998-07-22

Quad Summary: Burnt Peak (3411865/163A), Whitaker Peak (3411856/163C), Liebre Mtn. (3411866/163B), Warm Springs Mountain (3411855/163D)
County Summary: Los Angeles

Lat/Long: 34.64800º / -118.60544º
UTM: Zone-11 N3835180 E352869
Area: 1,061.0 acres
Elevation: 2,040 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 06N
Range: 17W
Section: 12 **Qtr:** XX
Meridian: S

Location: FISH CYN, SOUTH OF PIANOBOX PROSPECT & EAST FORK FISH CYN.
Ecological: OPEN CANOPY ALNUS RHOMBIFOLIA & BACCHARIS VIMINEA BELOW CAMPGROUND ACC TO WIESLANDER SURVEY. 30-40% TREE COVER PER 1978 AIR PHOTOS ABOVE CAMP, OPEN ALNUS, PLATANUS, POPULUS, BACCHARIS & ERIOGONUM FASCIC PER WIESLANDER; TREES 10-30%, 1978.
Threat: CAMPGROUND DISTURBS.
General: RECENT GROUND TRUTH NEEDED. THIS WAS OCC #102 OF CTT62400CA.
Owner/Manager: USFS-ANGELES NF

Southern Willow Scrub

Element Code: CTT63320CA

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S2.1

Other Lists

Habitat Associations
General:
Micro:

Occurrence No. 19 **Map Index:** 00901 **EO Index:** 15277

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1978-09-19
Site: 1978-09-19
Record Last Updated: 1998-07-21

Quad Summary: Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.67847º / -118.60593º
UTM: Zone-11 N3838561 E352878
Area: 305.1 acres
Elevation: 3,720 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 07N
Range: 16W
Section: XX **Qtr:** XX
Meridian: S

Location: FISH CANYON, N OF LITTLE BURNT PEAK D/S FOR ABOUT 3.5 MI.
Location Detail: MAPPED FROM INTERPRETATION OF AERIAL PHOTOS.
Ecological: WILLOW SCRUB WITH BACCHARIS VIMINEA, LEPIDOSPARTUM SQUAMATUM AND WIDELY SCATTERED PLATANUS RACEMOSA.
General: GROUND TRUTH NEEDED. THIS WAS OCC #019 OF CTT63320CA.
Owner/Manager: USFS-ANGELES NF

Occurrence No. 22 **Map Index:** 01613 **EO Index:** 15274

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1978-09-19
Site: 1978-09-19
Record Last Updated: 1998-07-21

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.70119º / -118.40966º
UTM: Zone-11 N3840811 E370895
Area: 28.5 acres
Elevation: 2,880 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 07N
Range: 14W
Section: 18 **Qtr:** NW
Meridian: S

Location: MYRICK CANYON, JUST EAST OF CALIFORNIA AQUEDUCT.
Location Detail: MAPPED FROM INTERPRETATION OF AERIAL PHOTOS.
Ecological: UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO
General: NEEDS FIELD VERIFICATION.
Owner/Manager: UNKNOWN

Taxidea taxus

American badger — **Element Code:** AMAJF04010

Status	NDDB Element Ranks	Other Lists
Federal: None	**Global:** G5	**CDFG Status:** SC
State: None	**State:** S4	

Habitat Associations

General: MOST ABUNDANT IN DRIER OPEN STAGES OF MOST SHRUB, FOREST, AND HERBACEOUS HABITATS, WITH FRIABLE SOILS.

Micro: NEEDS SUFFICIENT FOOD, FRIABLE SOILS & OPEN, UNCULTIVATED GROUND. PREYS ON BURROWING RODENTS. DIGS BURROWS.

Occurrence No. 26 **Map Index:** 56527 **EO Index:** 56543

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1988-05-16
Site: 1988-05-16
Record Last Updated: 2004-08-30

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.68657º / -118.45049º
UTM: Zone-11 N3839243 E367132
Area:
Elevation: 3,800 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POLYGON
Township: 07N
Range: 15W
Section: 22 **Qtr:** NE
Meridian: S

Location: 0.6 MILE NORTH OF LAKE HUGHES.

Ecological: HABITAT CONSISTS OF CHAPARRAL, DOMINATED BY ADENOSTOMA, ARCTOSTAPHYLOS, CEANOTHUS, CERCOCARPUS, AND PINUS COULTERI.

Threat: POSSIBLY THREATENED BY A WASTEWATER TREATMENT PLANT.

General: AN ACTIVE DEN WAS OBSERVED, 13-16 MAY 1988.

Owner/Manager: UNKNOWN

Occurrence No. 151 **Map Index:** 01549 **EO Index:** 56863

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1904-06-21
Site: 1904-06-21
Record Last Updated: 2004-09-20

Quad Summary: Fairmont Butte (3411874/187C), Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.73609º / -118.42397º
UTM: Zone-11 N3844700 E369639
Radius: 1 mile
Elevation: 2,800 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 15W
Section: 36 **Qtr:** SW
Meridian: S

Location: FAIRMONT, ANTELOPE VALLEY.

Location Detail: MAPPED ACCORDING TO LAT/LONG GIVEN BY MVZ; MAX ERROR DISTANCE: 1 KM.

General: MALE COLLECTED (MVZ #7077) BY JOSEPH GRINNELL ON 21 JUN 1904. 1 COLLECTED (DATE UNKNOWN), LACM.

Owner/Manager: UNKNOWN

Occurrence No. 334 **Map Index:** 57756 **EO Index:** 57772

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: XXXX-XX-XX
Site: XXXX-XX-XX
Record Last Updated: 2004-10-27

Quad Summary: Neenach School (3411875/188D)
County Summary: Kern, Los Angeles

Lat/Long: 34.82942º / -118.57052º
UTM: Zone-11 N3855251 E356383
Radius: 1 mile
Elevation:
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 16W
Section: 34 **Qtr:** XX
Meridian: S

Location: ANTELOPE VALLEY, NEAR NEENACH, KERN COUNTY.

Location Detail: AREA MAPPED IS IN THE VICINITY OF THE LOS ANGELES AQUEDUCT TO THE NORTH AND THE KERN COUNTY LINE TO THE SOUTH.

General: 1 COLLECTED, FMNH (FIELD MUSEUM OF NATURAL HISTORY, CHICAGO).

Owner/Manager: UNKNOWN

Toxostoma lecontei

Le Conte's thrasher

Element Code: ABPBK06100

Status	NDDB Element Ranks	Other Lists
Federal: None	**Global:** G3	**CDFG Status:** SC
State: None	**State:** S3	

Habitat Associations

General: DESERT RESIDENT; PRIMARILY OF OPEN DESERT WASH, DESERT SCRUB, ALKALI DESERT SCRUB, AND DESERT SUCCULENT SCRUB HABITATS.

Micro: COMMONLY NESTS IN A DENSE, SPINY SHRUB OR DENSELY BRANCHED CACTUS IN DESERT WASH HABITAT, USUALLY 2-8 FEET ABOVE GROUND.

Occurrence No. 57 **Map Index:** 01703 **EO Index:** 24519

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1968-09-21
Site: 1968-09-21
Record Last Updated: 1989-08-10

Quad Summary: Willow Springs (3411883/187A), Tylerhorse Canyon (3411884/187B), Little Buttes (3411873/187D), Fairmont Butte (3411874/187C)

County Summary: Kern

Lat/Long: 34.87886º / -118.38201º
UTM: Zone-11 N3860480 E373699
Radius: 1 mile
Elevation: 2,720 ft

Mapping Precision NON-SPECIFIC
Symbol Type: POINT

Township: 09N
Range: 14W
Section: 08 **Qtr:** SE
Meridian: S

Location: 5 MILES WEST OF WILLOW SPRINGS, IN THE VICINITY OF THE INTERSECTION OF MEERS ROAD AND 104TH STREET WEST.

General: LACM SPECIMEN #80669.

Owner/Manager: UNKNOWN

Valley Needlegrass Grassland

Element Code: CTT42110CA

Status
Federal: None
State: None

NDDB Element Ranks
Global: G1
State: S3.1

Other Lists

Habitat Associations
General:
Micro:

Occurrence No. 5 **Map Index:** 01705 **EO Index:** 13582

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1980-04-XX
Site: 1980-04-XX
Record Last Updated: 1998-07-15

Quad Summary: Del Sur (3411863/162A), Little Buttes (3411873/187D), Fairmont Butte (3411874/187C), Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.74248º / -118.38175º
UTM: Zone-11 N3845355 E373514
Radius: 1 mile
Elevation: 2,880 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 14W
Section: 32 **Qtr:** NE
Meridian: S

Location: ANTELOPE VALLEY CA POPPY RES. 2 MI E OF FAIRMONT ON LANCASTER AVE; ANTELOPE BUTTES.
Location Detail: TOP & SIDES OF BUTTES. MAPPED AS GENERAL DUE TO SIZE.
Ecological: NASSELLA COVERS (5-30%). SLOPE 5-80%. SANDY-GRAVELLY SOIL.
Threat: ADJ LAND IRRIGATED, BARLEY/ALFALFA. CA AQUEDUCT NEARBY.
General: FAIRLY UNDISTURBED. THIS WAS OCC #005 OF CTT42110CA.
Owner/Manager: DPR-ANTELOPE VALLEY CA POP RES

Occurrence No. 22 **Map Index:** 01627 **EO Index:** 19752

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1980-04-25
Site: 1980-04-25
Record Last Updated: 1998-07-15

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.71942º / -118.40731º
UTM: Zone-11 N3842830 E371139
Radius: 1/5 mile
Elevation: 2,900 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 07N
Range: 14W
Section: 06 **Qtr:** SW
Meridian: S

Location: SE OF FAIRMONT. E OF RD 160 ON STEEP SLOPES. S OF ANTELOPE VALLEY POPPY RESERVE.
Location Detail: S & E ASPECT.
Ecological: NASSELLA CERNUA DOM. SOIL SANDY, GRAVELLY, SLOPE 60-80%. ASSOC. SPP: POA SECUNDA VAR. SECUNDA, SITANION, BROMUS TECTORUM & B. RUBENS. ESCHSCHOLZIA ON BLUFFS ABOVE RAVINES.
Threat: DRY FARMING AND SOME IRRIGATION ON FLATS. AREA BISECTED BY RAVINES.
General: THIS WAS OCC #022 OF CTT42110CA.
Owner/Manager: UNKNOWN

Occurrence No. 57 **Map Index:** 24322 **EO Index:** 6457

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1992-04-09
Site: 1992-04-09
Record Last Updated: 1998-07-15

Quad Summary: Neenach School (3411875/188D)
County Summary: Kern

Lat/Long: 34.85879º / -118.60543º
UTM: Zone-11 N3858559 E353243
Area: 207.2 acres
Elevation: 3,360 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 09N
Range: 16W
Section: 19 **Qtr:** NE
Meridian: S

Location: WESTERN ANTELOPE VALLEY. 5 MILES DUE NORTH OF NEENACH SCHOOL AND HWY 138 BETWEEN 270TH AND 280TH STREETS.
Location Detail: SINGLE PATCH OF VEGETATION ON GRADUAL SOUTHWEST FACING SLOPE NEAR THE BASE OF THE BAJADA. SOUTH SLOPE OF THE TEHACHAPIS.
Ecological: SHRUB/PERENNIAL GRASS LAYER DOMINATED BY ACHNATHERUM SPECIOSUM (72%) WITH STEPHANOMERIA ALSO PRESENT. HERB LAYER INCLUDES ERODIUM CICUTARIUM, CAMISSONIA, ERIOGONUM, OENOTHERA DELTOIDES, BROMUS MADRITENSIS RUBENS.
Threat: POTENTIAL THREATS INCLUDE DEVELOPMENT AND CULTIVATION.
General: SOIL IS GRANITIC WITH SOME INDIVIDUAL MARBLE (DOLOMITE) STONES AND FINE ANGULAR DECOMPOSED GRANITE ON THE SURFACE. THIS WAS OCC #057 OF CTT42110CA.
Owner/Manager: PVT-TEJON RANCH CO

Valley Needlegrass Grassland

Element Code: CTT42110CA

Status

Federal: None
State: None

NDDB Element Ranks

Global: G1
State: S3.1

Other Lists

Habitat Associations

General:
Micro:

Valley Oak Woodland

Element Code: CTT71130CA

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S2.1

Other Lists

Habitat Associations
General:
Micro:

Occurrence No. 77 **Map Index:** 00897 **EO Index:** 12450

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1988-03-31
Site: 1988-03-31
Record Last Updated: 1998-07-31

Quad Summary: Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.72400º / -118.60150º
UTM: Zone-11 N3843603 E353364
Area: 191.4 acres
Elevation: 4,080 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 07N
Range: 16W
Section: 05 **Qtr:** W
Meridian: S

Location: N-FACING & NE-FACING HILLSIDE BETWEEN OAK FLAT & OAK GROVE CANYON, E OF PRATT CANYON.

Ecological: OPEN WOODLAND OF QUERCUS LOBATA AND PINUS SABINIANA WITH GRASS UNDERSTORY ACCORDING TO WIESLANDER SURVEY.

Threat: GRAZED BY CATTLE.

General: FIELD VERIFIED 1988. THIS WAS OCC #077 OF CTT71130CA.

Owner/Manager: UNKNOWN

Occurrence No. 79 **Map Index:** 00766 **EO Index:** 28767

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Decreasing

Dates Last Seen
Element: 1988-04-01
Site: 1988-04-01
Record Last Updated: 1998-07-31

Quad Summary: La Liebre Ranch (3411876/188C), Liebre Mtn. (3411866/163B)
County Summary: Los Angeles

Lat/Long: 34.74608º / -118.67092º
UTM: Zone-11 N3846156 E347048
Radius: 1 mile
Elevation: 3,680 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 07N
Range: 17W
Section: XX **Qtr:** XX
Meridian: S

Location: SAN ANDREAS RIFT ZONE, VICINITY OF RANCHO CORONA DEL VALLE.

Ecological: OPEN WOODLAND OF QUERCUS LOBATA OVER CHRYSOTHAMNUS NAUSEOSUS AND/OR GRASS ACCORDING TO WIESLANDER SURVEY. QUERCUS LOBATA <15%, C. NAUSEOSUS >40%.

Threat: SITE HEAVILY GRAZED.

General: THIS WAS OCC #079 OF CTT71130CA.

Owner/Manager: UNKNOWN

Occurrence No. 80 **Map Index:** 00838 **EO Index:** 15109

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1988-04-01
Site: 1988-04-01
Record Last Updated: 1998-07-31

Quad Summary: Liebre Mtn. (3411866/163B)
County Summary: Los Angeles

Lat/Long: 34.72713º / -118.63416º
UTM: Zone-11 N3843999 E350379
Area: 58.9 acres
Elevation: 4,280 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 07N
Range: 17W
Section: 01 **Qtr:** XX
Meridian: S

Location: RICHARDSON CANYON, NEAR PINE GROVE RANCH.

Location Detail: HOLLAND, 1988 SAW SAME PLANT ASSEMBLAGE BUT MODIFIED BOUNDARY CONSIDERABLY.

Ecological: OPEN WOODLAND OF QUERCUS LOBATA AND PINUS SABINANA ACCORDING TO WIESLANDER SURVEY.

General: THIS WAS OCC #080 OF CTT71130CA.

Owner/Manager: USFS-ANGELES NF

Valley Oak Woodland

Element Code: CTT71130CA

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S2.1

Other Lists

Habitat Associations
General:
Micro:

Occurrence No. 81 **Map Index:** 00817 **EO Index:** 15108

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1988-04-01
Site: 1988-04-01
Record Last Updated: 1998-07-31

Quad Summary: Liebre Mtn. (3411866/163B)
County Summary: Los Angeles

Lat/Long: 34.72925º / -118.64631º
UTM: Zone-11 N3844252 E349271
Area: 36.4 acres
Elevation: 1,200 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 08N
Range: 17W
Section: XX **Qtr:** XX
Meridian: S

Location: INTERMITTENT STREAM ASSOC W/COW SPRING, SOUTH OF OAKDALE CANYON ROAD.

Ecological: OPEN WOODLAND OF QUERCUS LOBATA AND PINUS SABINIANA OVER ARTEMISIA TRIDENTATA ACCORDING TO WIESLANDER SURVEY. OPEN CANOPY QUERCUS LOBATA W/SCATTERED PINUS ABINANA PER HOLLAND, 1988.

General: THIS WAS OCC #081 OF CTT71130CA.

Owner/Manager: USFS-ANGELES NF

Occurrence No. 101 **Map Index:** 00690 **EO Index:** 13490

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1988-04-01
Site: 1988-04-01
Record Last Updated: 1998-07-31

Quad Summary: Burnt Peak (3411865/163A)
County Summary: Los Angeles

Lat/Long: 34.71256º / -118.55870º
UTM: Zone-11 N3842273 E357264
Area: 84.9 acres
Elevation: 4,120 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 08N
Range: 17W
Section: 32 **Qtr:** NW
Meridian: S

Location: VICINITY OF QUAIL LAKE FIRE STATION, EAST OF BALD MOUNTAIN.

Ecological: OPEN WOODLAND OF QUERCUS LOBATA WITH SCATTERED PINUS SABINIANA WITH GRASS UNDERSTORY ACCORDING TO WIESLANDER SURVEY, 1935 AND HOLLAND, 1988.

Threat: GRAZED BY CATTLE, 1988.

General: APPEARS TO BE PARTLY AN INHOLDING W/IN ANGELES NATIONAL FOREST. THIS WAS OCC #101 OF CTT71130CA.

Owner/Manager: UNKNOWN

Wildflower Field

Element Code: CTT42300CA

Status
Federal: None
State: None

NDDB Element Ranks
Global: G2
State: S2.2

Other Lists

Habitat Associations
General:
Micro:

Occurrence No. 1 **Map Index:** 01580 **EO Index:** 13322

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1980-04-25
Site: 1980-04-25
Record Last Updated: 1998-07-14

Quad Summary: Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.71331º / -118.41674º
UTM: Zone-11 N3842164 E370266
Radius: 1/5 mile
Elevation: 2,950 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 07N
Range: 15W
Section: 12 **Qtr:** NE
Meridian: S

Location: SE OF FAIRMONT. SE OF JCT CA AQUEDUCT & AVE H.

Ecological: ESCHSCHOLZIA CALIFORNICA IN DENSE STANDS ON LEVEL TERRAIN. SLOPE 0.10%, ASPECT VARIOUS. UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO.

Threat: SOME OF THE AREA HAS BEEN PLOWED.

Owner/Manager: UNKNOWN

Occurrence No. 2 **Map Index:** 01705 **EO Index:** 7494

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1980-04-XX
Site: 1980-04-XX
Record Last Updated: 1998-07-14

Quad Summary: Del Sur (3411863/162A), Little Buttes (3411873/187D), Fairmont Butte (3411874/187C), Lake Hughes (3411864/162B)
County Summary: Los Angeles

Lat/Long: 34.74248º / -118.38175º
UTM: Zone-11 N3845355 E373514
Radius: 1 mile
Elevation: 2,880 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 08N
Range: 14W
Section: 32 **Qtr:** NE
Meridian: S

Location: ANTELOPE VALLEY CA POPPY RES. 2 MI E OF FAIRMONT ON LANCASTER AVE; ANTELOPE BUTTES.

Location Detail: MAPPED AS GENERAL DUE TO SIZE.

Ecological: IN FLATS AT BASE OF BUTTES. SLOPE 0-5%. SANDY-GRAVELLY SOIL. UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO.

Threat: ADJ LAND IRRIGATED, BARLEY/ALFALFA. CA AQUEDUCT NEARBY.

Owner/Manager: DPR-ANTELOPE VALLEY CA POP RES

Appendix D – Plant List

Table 3
List of Plants Observed During Botanical Survey

Family	Scientific Name	Common Name	Note[1]
GYMNOSPERMS			
Cupressaceae	*Juniperus californica*	California juniper	N
Ephedraceae	*Ephedra nevadensis*	Mormon tea	N
Pinaceae	*Pinus* spp.	Pine	I
DICOTS			
Asclepiadaceae	*Asclepias erosa*	Desert milkweed	N
	Centaruea solstialis	Yellow starthistle	I
Asteraceae	*Chaenactis fremontii*	Desert pincushion	N
	Chamomilla suaveolens	Pineapple weed	I
	Chrysothamnus nauseosus ssp. ceruminosus	Rubber rabbitbrush	N
	Encelia farinosa	Brittlebush	N
	Ericameria linearifolius	Interior Goldenbush	N
	Gnaphalium palustre	Western marsh cudweed	N
	Helianthus californicus	California sunflower	N
	Lactuca serriola	Prickly lettuce	I
	Lasthenia californica	Goldfields	N
	Malacothrix glabrata	Desert dandelion	N
Boraginaceae	*Amsinckia menziesii var. menziesii*	Rancher's fireweed	N
	Amsinckia tessellata	Bristly fiddleneck	I
	Cryptantha angustifolia	Panamint catseye	N
	Cryptantha micrantha	Purpleroot cryptantha	N
	Pectocarya recurvata	Curvenut colmbsead	N
Brassicaceae	*Descurainia pinnata*	Tansy mustard	N
	Guillenia lasiophylla	California mustard	N
	Sysimbirum altissimum	Tumblemustard	I
	Sysimbrium irio	London rocket	I
Cactaceae	*Opuntia echinocarpa*	Silver cholla	N
Capparaceae	*Isomeris arborea*	Bladderpod	N
Chenopodiaceae	*Salsola tragus*	Russian thistle	I
Cucurbitaceae	*Cucurbita palmata*	Coyote melon	N
Cuscutaceae	*Cuscuta sp.*	Dodder	N
Euphorbiaceae	*Chamaesyce albomarginata*	Rattlesnake weed	N
	Eremocarpus setigerus	Dove weed	N
Fabaceae	*Astraguls douglassi*	Douglas milkvetch	N

Table 3
List of Plants Observed During Botanical Survey

	Lathyrus lanszwertii	Nevada pea	N
	Lotus strigosus	Strigose birds'-foot trefoil	I
	Lupinus microcarpus	Chick lupine	N
	Robinia pseudoacacia	Black locust	I
Geraniaceae	*Erodium botrys*	Longbeak stork's bill	I
	Erodium cicutarium	Filaree	I
Hydrophyllaceae	*Phacelia distans*	Common phacelia	N
Lamiaceae	*Salvia columbariae*	Chia	N
Lamiaceae	*Marrubium vulgare*	Horehound	I
Loasaceae	*Mentzelia jonesii*	Blazing star	N
Nyctaginaceae	*Mirabilis multiflora*	Giant 4 o'clock	N
Onagraceae	*Camissinia subacaulis*	Long-leaved evening primrose	N
	Camissonia palmeri	Desert suncups	N
	Oenetheria deltoides	Dune primrose	N
Papaveraceae	*Argemone corymbrosa*	Prickly poppy	N
	Eschscholzia californica	California poppy	N
Polemoniaceae	*Gilia achilleifolia spp. achilleifolia*	California gilia	N
	Gilia achilleifolia spp. multicaulis	California gilia	N
	Gilia capillaries	Miniature gilia	N
Polygonaceae	*Eriogonum angulosum*	Wild buckwheat	N
	Eriogonum faciculatum	California buckwheat	N
	Eriogonum inflatum	Desert trumpet	N
	Eriogonum maculatum	Spotted buckwheat	N
Salicaceae	*Populus spp.*	Cottonwood	N
Scrophulariaceae	*Castilleja exserta*	Purple owl's clover	N
Solaneaceae	*Datura stramonium*	Jimson weed	I
Tamaricaceae	*Tamarix ramosissima*	Tamarisk	I
Zygophyllaceae	*Tribulus terrestris*	Puncturevine	I
MONOCOTS			
Liliaceae	*Yucca brevifolia*	Joshua tree	N
Poaceae	*Avena fatua*	Wild oat	N
	Bromus rubens	Red brome	I
	Bromus tectorum	Cheatgrass	I
	Hesperostipa comata	Needle-and-thread	N
	Hordeum jubatum	Foxtail barley	I
	Hordeum murinum ssp. leporinum	Barley	I
	Pleuraphis rigida	Big galleta	N

Table 3
List of Plants Observed During Botanical Survey

	Poa annua	Annual bentgrass	N

Note
1: N = Native; I = Introduced; -- = Could not be determined.

Appendix E – Site Photographs

Photo 1: Viewing south from the center of the Western Parcel within non-native grassland.

Photo 2: Viewing north from the center of the Western Parcel within non-native grassland.

Photo 3: Viewing west at large ephemeral wash dominated by Russian thistle located north of the Western Parcel, but outside of the Project site.

Photo 4: Viewing east at large ephemeral wash dominated by Russian thistle located north of the Western Parcel, but outside of the Project site

Photo 5: Viewing west from the eastern portion of the Western parcel within rabbitbrush scrub.

Photo 6: Viewing east from the eastern portion of the Western parcel within rabbitbrush scrub.

Photo 7: Viewing north from the northwestern portion of the Eastern Parcel within rabbitbrush scrub.

Photo 8: Viewing south from the northwestern portion of the Eastern Parcel within rabbitbrush scrub.

Photo 9: Viewing north from the southern portion of the Eastern Parcel located within a fallow agricultural field dominated by ruderal vegetation.

Photo 10: Viewing east from the southern portion of the Eastern Parcel located within a fallow agricultural field dominated by ruderal vegetation.

Appendix H
Burrowing Owl Protocol Survey

Burrowing Owl (*Athene cunicularia*) Protocol Presence/Absence Surveys for Alpine Solar Project, Los Angeles County, California

Prepared for

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June 24, 2010

Table of Contents

	Page
Introduction and Purpose	3
Project Location	3-4
Habitat and Land Use	4-5
Burrowing Owl Species Description	5-6
CNDDB Rarefind Database and Search Results	6
Justification, Methodology & Qualifications	6-7
Field Survey Results	7-8
Discussion of Results	11
Mitigation Recommendations	12-14
Literature Cited	15
Certification	16

Figures

Figure A: Aerial View of ASP Site, Burrow & Incidental Detections	17
Figure B: Aerial View of Burrowing Owl Locations, Territories & Photo Points	18
Figure C: Burrowing Owl CNDDB Search Results	19
Figure D: Burrowing Owl Photos	20
Figure E: Proposed On-site Mitigation Land Habitat Photos	21

Tables

Table 1: Detections for the ASP Energy Project	9-10
Table 2: Vertebrates Detected During the ASP Surveys	22
Table 3: Vascular Plants Detected During the ASP Surveys	23

Introduction and Purpose:

At the request of CH2M Hill Inc., Phoenix Ecological Consulting (Phoenix) initiated protocol burrowing owl surveys at a project site known as the Alpine Solar Project (ASP). The project proponent proposes to install a nominal 92-megawatt (MW) alternating current (AC) solar photovoltaic (PV) generating facility located on approximately 580 acres of developable area of the approximately 800-acre project site. The project site includes two distinct areas, the Western Parcel (approximately 600 acres) and the Eastern Parcel (approximately 200 acres), which will be connected by a 34-kilovolt (kV) transmission line (Figure A). The power generated by the project will be delivered from the project site to the California Independent System Operator (CAISO) grid by constructing a new, 1-mile long, and 66- kV generation tie-line to the Neenach Substation, which is owned and operated by Southern California Edison (SCE). Due to the potential impacts associated with the solar project, phase II owl surveys were conducted to determine if owls are present and to assess alternatives available to mitigate the impacts.

Burrowing owl (BUOW; *Athene cunicularia*) phase II-III protocol surveys were conducted during the months of April-June, 2010. A 150 meter buffer area survey was also conducted. The burrowing owl survey results were positive within the project site. Three burrowing owl territories were detected; five adult owls, two pairs and one unmated male were documented. The three territories are clustered in the southeastern portion of the western parcel, at West Avenue C and 210th Street West (Figure B).

Project Location:

The project site is located one mile north of Highway 138 (West Avenue D) near the Neenach substation in unincorporated portion of Los Angeles County within the Antelope Valley. The Kern County border lies 1.3 miles to the north. The elevation is 2,750 feet. The project boundary is situated between 220th Street West, on the western edge, and 200th Street West on, on the eastern edge. The northern boundary is south of West Avenue B and the southern boundary is aligned with West Avenue C. The project includes two proposed

photovoltaic solar fields of approximately 580 acres within Section 7 & 8, Township 8 North, Range 15 West, within United State Geological Survey (USGS) 7.5 Series Neenach School & Fairmont Butte Topographic Quadrangles. In addition, there is approximately one linear mile long and 100 feet wide transmission corridor along 210th Street West from Avenue C to Avenue D.

Habitat and Land Use:

The proposed project area is within disturbed, fallow agriculture fields. There is evidence of recent disking within portions of the site where the soils are exposed. There is also evidence of sheep grazing. There were approximately 100 sheep on the project site on May 14th, during the phase III owl survey. Some of the existing burrows on the western portion of the site received damage from sheep grazing. The remainder of the site consists of disturbed soils and low-lying, non-native vegetation such as non-native mustard, wild sunflower and Russian thistle (*Salsola sp*.) which has colonized the majority of the site. According to eSolar representative, Michael Bass, a portion of the site was farmed for carrots as recently as August 2008, which coincides with available aerial photos. Low-lying rabbitbrush (*Chrysothamnus sp*.) scrub commonly occurs within portions of the site and along the borders. There are also two vacant homesteads within the project site. The first is located in the southwestern corner of the western parcel and consists of dozens of ornamental, non-native trees, a water tank, a concrete pad and small piles of rubbish from the previous tenants. The second is located in the northern portion of the eastern parcel. It consists of ornamental trees, a double-wide mobile home, fence posts and a barn. There is also a row of 15-20 foot tall pine trees in the eastern parcel, along the western edge and south of the vacant home. Presumably, the trees were planted as wind breaks.

The topography is relatively flat with a mild north-east sloping grade of less than 10%. The gradient empties into a large unnamed drainage along the northern project limits. There are also several large soil mounds along the southern edge of the western parcel. The drainage along the northern edge of the western parcel ranges from 15 feet high and 20 feet wide, along

the western boundary, and widens out to 10 feet high and 25 feet wide, along the eastern edge of the property. The drainage flows in an easterly direction. During the survey visits, the drainage was full of dried Russian thistle that has blown into the drainage during high wind events. The soils consists a sandy-loam in the drainage and hard-packed silty-clay loam throughout the remainder of the site.

Burrowing Owl Species Description

Burrowing owls (*Athene cunicularia*) are small, long-legged, ground-dwelling owls that occur from British Columbia, throughout North America and portions of Central and South America. They winter in the southern latitudes and many remain as year-long residents in Southern California. At higher elevations and latitudes, they will only occur during breeding seasons. In California, high density owl populations have been documented in agriculture areas in the San Joaquin Valley and Imperial Valleys.

Burrowing owls occur in a variety habitat types throughout California; such as, annual and perennial grasslands, agriculture fields, deserts and scrublands characterized by low-growing vegetation (CBOC, 1993). Suitable owl habitat may also include areas with trees and shrubs where canopy cover is less than 30% of ground surface. Suitable burrows may include both artificial and natural burrows that provide shelter from the elements as well as protection from predators. Burrowing owls also use burrows for nesting during spring and early summer months. The California ground squirrel (CGS; *Spermophilus beecheyi)* is known to provide suitable burrows as well as inactive coyote, kit fox, badger and desert tortoise burrows. Burrowing owls can also create and/or modify existing burrows. Artificial burrows may include culverts, concrete pipes, irrigation boxes, wood debris piles and openings beneath cement or asphalt.

They are most active at night but are also known to be crepuscular (active dawn and dusk). Typical prey items include invertebrates, small mammals, lizards, snakes and small birds. They nest underground in burrows and clutches range between 4-9 eggs. Burrow entrances and nests area may be adorned with cow chips, feathers, grass, trash, food items and dog feces.

They are typically monogamous and tend to exist in colonies. They exhibit high nest fidelity and will return to the same burrow nest site for multiple years.

In desert scrub habitat, they are usually associated with canid and CGS burrows along mounds that provide vistas for viewing prey and predators. They are also found along washes and wash banks where small mammal and invertebrate abundance is higher. Burrowing owls are a BLM sensitive species and a California species of special concern. They are also protected under the Migratory Bird Treaty Act (MBTA) and within sections 3503, 3503.5 and 3800 of the California Department of Fish and Game Code which prohibits the take, possession, or destruction of birds, their nests or eggs (CBOC, 1993).

CNDDB Rarefind Database Search Results

A thorough literature review was conducted prior to the field work to determine the likelihood of burrowing owl encounters within the project footprint. The main database used in compiling known burrowing owl occurrences was the California Natural Diversity Database (CNDDB). There are multiple owl occurrences in the area; (1) Occurrence #351, 4 miles to the southwest, in 1999, describes a burrow with fledged young at 250th Street west and Avenue C, near the Los Angeles Aqueduct, (2) Occurrence #352, 4.6 miles to the southwest, in 1999, describes an occupied owl burrow north of Avenue D, near 256th Street (3) Occurrence #985, 3.9 miles to the northeast, in 2007, describes one owl observed near 180th Street West and Avenue A (Figure C; CNDDB, 2010). In summary, the project site lies within the range of the burrowing owl. There are known occurrences within 3-4 miles of the project which warrants the presence/absence surveys that were conducted this year.

Justification, Methodology and Qualifications:

Due to the fact that the proposed project site is located within the range of the burrowing owl, suitable vegetation habitat types occur on site and recent owl detections have occurred in the project vicinity protocol surveys were implemented during the 2010 survey period. The surveys began on April 18th and ended on June 21th. Survey methodology incorporated the *Burrowing Owl Survey Protocol and Mitigation Guidelines* (CBOC, 1993). Field

surveyors included: Ryan Young, David Focardi, Jenny Weidensee, Josh Utter, Brooks Hart, Rebecca Koller and Brett Blosser.

The phase II survey methods consisted of walking thirty meter wide belt transects surveys, using hand-held Garmin GPS units with a 3-5 meter accuracy, within the project footprint and the 150 meter buffer, in a north to south direction, starting approximately a half hour after sunrise and ending no later than a half hour before sunset. Survey teams used hand-held mirrors to view into any potential burrows. During the survey, the surveyors search images included: burrows, burrowing owls, owl feathers, pellets, owl whitewash (scat), owl vocalizations and other avian species. Surveyors average coverage rate was 1.5 miles per hour, with an average daily coverage rate of 70 acres per day, per person. The surveyors conducted 150 meter buffer surveys around the perimeter of the site. The phase III surveys involved re-visiting known burrow locations to determine if owls were present. In addition, known owl locations were assessed to determine breeding status, territory size, number of owls present and general behavior. Vehicular surveys were also conducted during the phase III surveys by driving along existing dirt roads, within the project site, and stopping every 200 meters to scan the vegetation for owls and playing burrowing owl vocalizations to elicit a response.

Weather conditions during the survey effort consisted of an unusually cool, windy, wet conditions. Morning and afternoon temperatures were taken each day to ensure surveys were conducted within suitable survey parameters for burrowing owls.

Field Survey Results:

The burrowing owl surveys were positive for burrowing owls. A total of five adult owls were detected on site; three territories consisting of two pairs and one unmated male. Additionally, four juvenile owls were detected during the final phase III surveys in territory #1. Additional juveniles are likely present in territory #2 but were not seen. This conclusion is based on the female owl's behavior which suggested nestlings are present. Territory #3 consisted of one unmated, male owl that was sighted on several occasions at a burrow with abundant whitewash. The owl territories are concentrated in the southeastern portion of the western parcel (Figure B). The territories depicted in figure B are an approximate estimate

based on diurnal observations. It is assumed the territories are larger than depicted, as foraging distances, at night, can extend up to 2.7 km (Shuford, W.D. et. al. 2008). The burrowing owl and burrow detections on figure B and table 1 illustrate common perch or hunting sites that the owl(s) in that territory were using during each site visit. There are nine burrows detected that had either owl whitewash or pellets present (Table 1, Figure A). Seven of the nine burrows appeared to be active. The seven active burrows are concentrated in the southeastern portion of the western parcel. Domestic sheep were sighted on the project site during the phase III surveys on May 14th. Evidence of trampling was noticeable on burrow #2.

All detections along with incidental biological detections are listed on table 1 and plotted on figure A & B. The detections are cross referenced by their occurrence numbers on table 1. All GPS locations are in UTM NAD 83 datum.

Table 1: Detections for the Alpine Solar Project

Number	Easting	Northing	Sign	Date	Phase	Photo Point	Description
2	361659	3850977	Burrow	4/18/2010	II	N/A	Burrow with whitewash. 210mmX180mmXunknown depth. Evidence of sheep damage. Inactive burrow.
5	362291	3851016	Burrow	4/18/2010	II	N/A	Burrow with whitewash. 240mmx200mmx depth unknown. Profuse & recent whitewash.
6	361151	3851272	Burrow	4/18/2010	II	N/A	Inactive burrow with small amount of whitewash. Vegetation filled in collapsing entrance. Soil undisturbed.
7	362203	3851122	Burrow	4/18/2010	II	3	Active burrow with abundant whitewash. Unmated male seen at this site on three occasions. Territory #3.
8	362252	3850919	Burrow	4/18/2010	II	N/A	Burrow with whitewash and pellets. Abundant whitewash. Two pellets. 220mmx180mmxunknown depth.
16	362290	3851016	Burrow	5/14/2010	III.1	N/A	Burrow with fresh pellets and some whitewash. Female flushed. .
18	362252	3850830	Burrow	6/18/2010	III.3	N/A	Active owl burrow. Whitewash and pellets present.
19	362193	3851153	Burrow	5/23/2010	III.3	3	Burrow with abundant whitewash with unmated owl. CGS in vicinity. Territory #3.
21	362246	3850885	Burrow	6/19/2010	III.4	1	Burrow with juvenile owls. Territory #1
0	362360	3851154	Burrowing Owl	06/21/2010	III.4	N/A	Territory #3. Male perched ~160 meters east of burrow.
1	362400	3850805	Burrowing Owl	4/18/2010	II	N/A	Owl flushed. No burrow sighted.
9	362258	3850832	Burrowing Owl	4/19/2010	II	N/A	Owl flushed near burrow. Burrow with whitewash, pellets and feathers. All abundant. No photos due to possible nest site.
13	362193	3851153	Burrowing Owl	5/23/2010	III.3	3	Male burrowing owl at CGS burrow. CGS nearby. Observed for 1 hour. No mate sighted. Responded to tapes on 06/18/2010. Unmated. Territory #3.
14	362257	3850832	Burrowing Owl	5/14/2010	III.1	N/A	Male and female owl sighted at known location. Owl feathers and whitewash abundant at burrow.

17	362252	3850797	Burrowing Owl	5/24/2010	III.3	2	Male owl perched next to burrow. Female came out for 2 minutes and went back in. Territory #2.
22	362274	3850996	Burrowing Owl	6/20/2010	III.4	N/A	Male owl. Hunting/perching. Territory #2.
23	362248	3850909	Burrowing Owl	6/18/2010	III.4	N/A	Male and female sighted near burrow. Male was making short flights. Territory #2.
20	362246	3850885	Juvenile Owls	6/19/2010	III.4	1	Three juvenile owls sighted. Male eventually arrived. Emitted alarm calls. Territory #1
24	362067	3850989	Burrowing owl	06/21/20410	III.4	N/A	Adult male hunting west of burrows in fallow agriculture field. Territory #1.
25	362088	3850941	Burrowing owl	06/21/2010	III.4	N/A	Adult male hunting west of burrows in fallow agriculture field. Territory #1.
Incidental Detections							
14	362200	3852031	Golden eagle	5/23/2010	III.3	N/A	One golden eagle that flushed from northeastern edge of western parcel along large drainage. Flew northeast and landed 300 meters away.
11	362099	3852047	Northern Harrier	4/19/2010	II	N/A	Harrier flew from drainage on northern boundary of western parcel.
3	362110	3850641	Loggerhead Shrike	4/18/2010	II	N/A	One loggerhead shrike perched on a Joshua Tree.
10	363825	3851476	Loggerhead Shrike	4/19/2010	II	N/A	One loggerhead shrike sitting on power line.
26	362708	3851084	Golden eagle	06/21/2010	III.4	N/A	One golden eagle flying/hunting along eastern edge of western parcel.

Discussion of Results:

Three burrowing owl territories were detected on the project site through the phase II-III survey efforts. The owls are concentrated, in a colony, in the southeastern portion of the western parcel, near West Avenue C and 210th Street West. However, owls are not widespread in the surrounding, suitable habitat but there are CNDDB records within 3-4 miles. The uneven distribution and concentration of owls in one particular area is worth further examination. The habitat, within the colony, consists of 1-2 foot tall rabbitbrush (*Chrysothamnus* sp.) scrub with devil's lettuce (*Amsinkia tesselata*) as the dominant annual. It is also along the edge of a fallow agriculture field, to the west, and Joshua tree/Juniper woodland, to the south. Several large dirt mounds along the southern edge and scattered Joshua trees provide perches for the owls.

There is also an abundance of California ground squirrels (CGS) detected in southeastern section of the western parcel. During the phase III intensive surveys, the surveyors paid particular attention of CGS densities. At the completion of the survey efforts, it was noticeable that the CGS density around West Avenue and 210th Street West was higher than the surrounding areas. It has been suggested that burrowing owl habitat is dependent on CGS for burrows (Grinnell, 1994) and numerous studies have illustrated the co-existence between the two species (Barclay, J.H. et. al, 2007). Based on these findings, there are several factors that may contribute to the owl colony location: (1) abundant CGS burrows for shelter and nesting (2) numerous perch sites (3) variety of habitat types and edges for foraging (4) low-lying vegetation growth to observe potential predators/prey (5) High CGS density which may also aid in detection of potential predators via alarm calls.

Mitigation Recommendations:

Due to the presence of burrowing owls, the following mitigation recommendations are provided for the project proponent to consider. They are listed in three main categories: (1) avoidance (2) onsite-mitigation for unavoidable impacts (3) off-site mitigation for unavoidable impacts. The two remaining categories describe passive relocation measures and additional mitigation considerations.

Avoidance Measures:

- The project proponent should evaluate whether a project design modification is feasible. If burrowing owl habitat avoidance is feasible, a minimum of 6.5 acres of foraging habitat, calculated at a 100 meter foraging radius, should be maintained per pair. Ideally, the foraging habitat would be maintained in a conservation easement.
- If avoidance is feasible, no disturbance should occur within 50 meters of occupied burrows during the non-breeding season (September 1 – January 31) or within 75 meters during the breeding season (February 1 – August 31).

On-Site Mitigation Measures for Unavoidable Impacts:

- If project design modification is not feasible, occupied burrows should not be disturbed during the nesting season (February 1 to August 31) unless a qualified biologist has determined the owls are not breeding or that all juvenile owls are foraging independently.
- Acquire on-site mitigation lands at no less than 6.5 acres per pair or single bird. The lands should be preserved in a conservation easement. Due to the presence of three territories on site, the minimum area needed would be 19.5 acres.
- When the destruction of occupied burrows is unavoidable, existing burrows within mitigation lands should be enhanced or enlarged or created (by installing artificial burrows) in a ratio of 1:1 in the on-site mitigation lands.

- Mitigation lands should be fenced to prevent unwanted canid predators. Fencing would also provide potential perch sites for owls; prevent trespassers and OHV use in the conservation area.
- The project sponsor should provide funding for long-term management and monitoring of protected lands.

Off-site Mitigation Measures for Unavoidable Impacts:

- If on-site mitigation is not feasible, off-site habitat compensation for loss of burrowing owl nesting and foraging habitat should be acquired through a local conservation/land management group and permanently protected at the following ratios:

    a) Replacement of occupied habitat with occupied habitat at 1.5 times 6.5 acres per pair or single bird;
    b) Replacement of occupied habitat with habitat contiguous with occupied habitat at 2 times 6.5 acres per pair or single bird; and/or
    c) Replacement of occupied habitat with suitable unoccupied habitat at 3 times 6.5 acres per pair or single bird.

Passive Owl Relocation Measures:

- Prior to eviction, the project proponent should retain a qualified burrowing owl biologist to band the owls to aid in re-sighting efforts, post-eviction. Owls should be banded with a unique alpha-numeric color band to aid in re-sighting and relocation efforts.
- If avoidance is not an option, passive owl relocation should occur, after August 31st, over a two week period to acclimate the owls to the new site. Passive relocation involves installing one-way doors on active burrows to allow owls to "self-evict". The doors are installed for two days. After two days, the burrows are excavated and any owls

remaining inside the burrows are allowed to escape. The site is monitored for one week to determine the status of the burrowing owls.

- A monitoring plan should be developed that evaluates the methodology of the relocation efforts, success criteria, re-sighting efforts and habitat enhancement and management of the mitigation lands.
- An annual report that evaluates the relocation efforts and monitoring efforts should be submitted to the California Department of Fish and Game for a period of three years from completion of construction.

Additional Mitigation Measures:

- Burrowing owl worker awareness education should be provided to all construction related personnel. All project related personnel should receive an information pamphlet on general burrowing owl biology, how to recognize and avoid burrowing owls and the required set-backs when working in the vicinity of burrowing owls.
- When owls are present, a biological construction monitor should be present to monitor any burrowing owl in the area to determine if the level of disturbance is having an adverse impact on the owls. Biological monitors should also accompany any pre-project personnel such as land surveyors or well drilling and construction personnel.
- Utilize existing roads, whenever possible, to minimize disturbance to potential burrowing owl habitat.
- Conduct a 30 day preconstruction survey for burrowing owls prior to any ground disturbance. If burrowing owls are detected on site, no disturbance should occur within 50 m (160 ft) of occupied burrows during the non-breeding season (September 1 – January 31) or within 75 meters (250 ft) during the breeding season (February 1 – August 31).
- Submit a California Natural Diversity Database (CNDDB) form for any active burrowing owl burrows encountered in order to provide the resource agency personnel & biological consultants with a better understanding of owl distribution in this area.

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This concludes the burrowing owl phase IV survey report for the Alpine Solar Project.

Certification: *I hereby certify that the statements furnished above and in the attached figures and tables present the data and information required for this biological report and that the facts, statements and information presented are true and correct to the best of my knowledge.*

Date: _June 24, 2010_____ Signature: _____

Ryan Young, Senior Biologist & Principal

Figure A: Aerial View of the ASP Site & Burrow/Incidental Detections

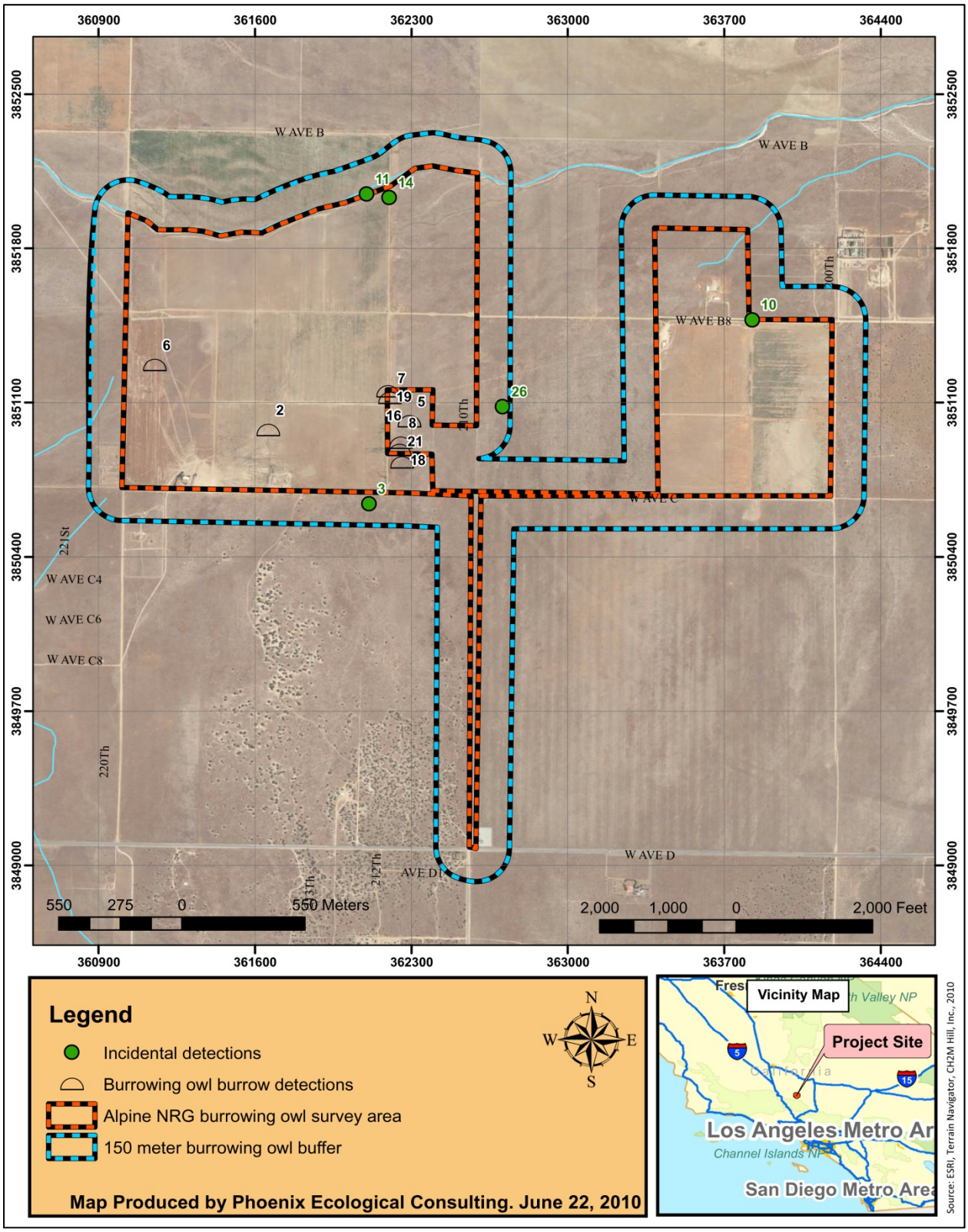


Figure B: Aerial View of Burrowing Owl Locations, Territories & Photo Points

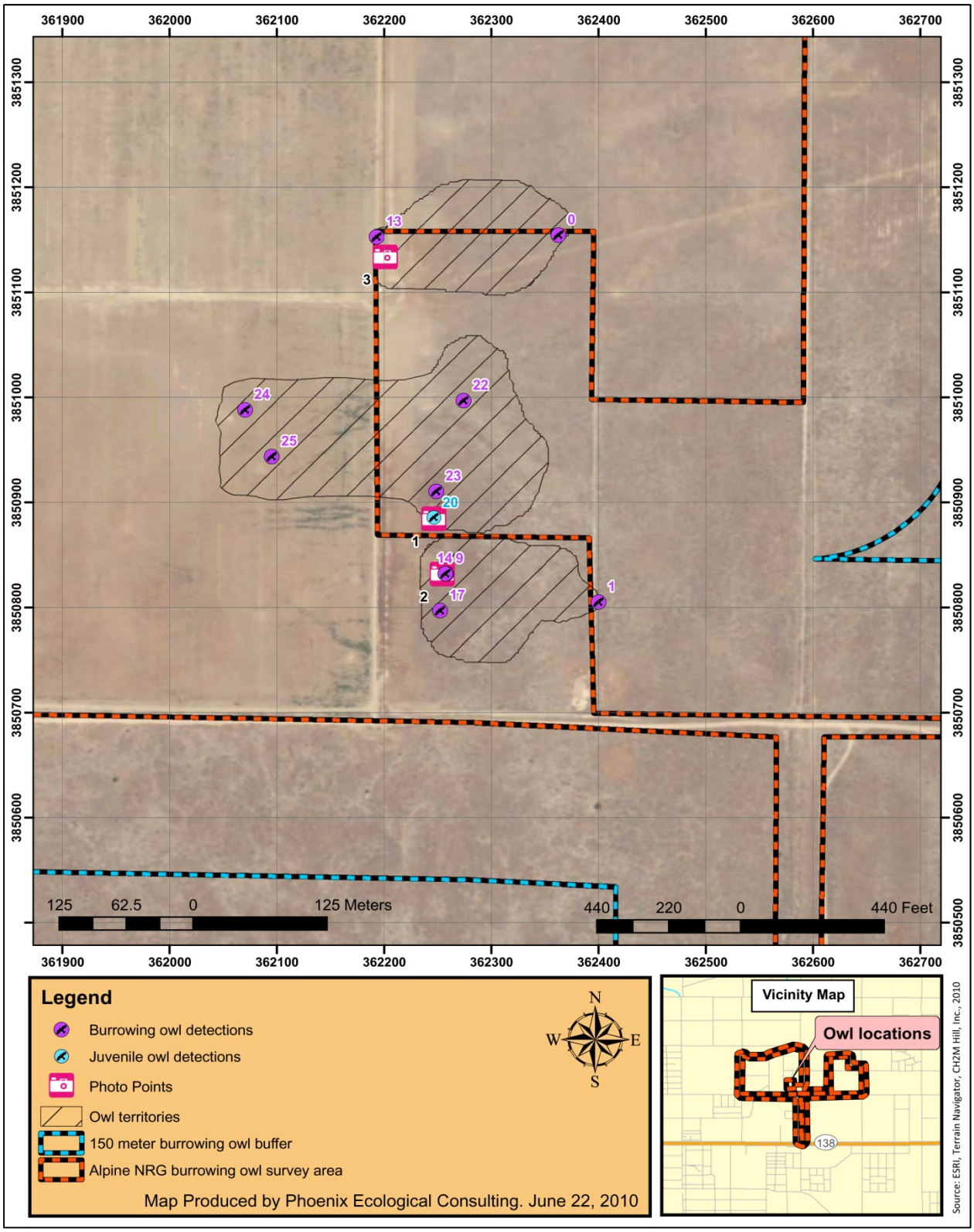


Figure C: CNDDB Burrowing Owl Occurrences for ASP

Figure D: Burrowing Owl Photos

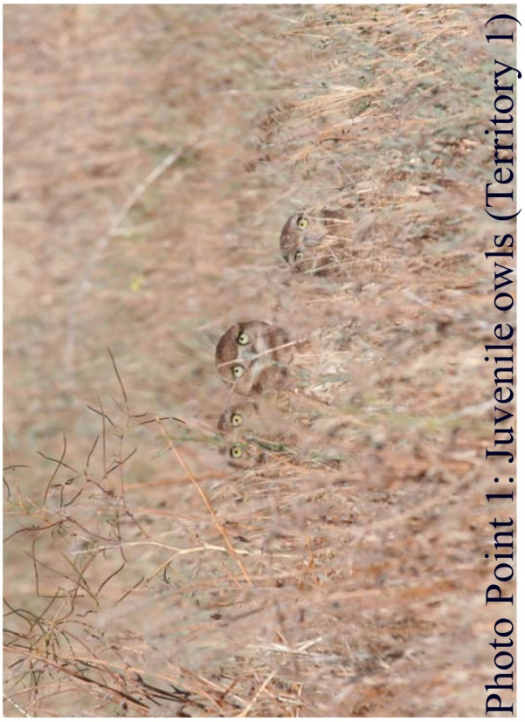


Photo Point 1: Juvenile owls (Territory 1)

Photo Point 2: Adult male and female (Territory 2)

Photo Point 3: Adult unmated male (Territory 3)

Figure E: Proposed On-Site Mitigation Land Habitat Photos

Proposed On-Site Mitigation Lands (NE Portion-native rabbitbrush)

Proposed On-Site Mitigation Lands (NW Portion-Non-Native mustard)

Table 2: Vertebrates Detected During the ASP Surveys

Mammals
Antelope ground squirrel (*Ammospermophilus leucurus*)
Black tailed jack rabbit (*Lepus californicus*)
California ground squirrel (*Spermophilus beecheyi*)
Coyote (*Canis latrans*)
Desert woodrat (*Neotoma lepida*)
Domestic sheep (*Ovis aries*)-scat only
Kangaroo rat (*Dipodomys sp.*)-scat only
Birds
Ash-throated flycatcher (*Myiarchus nuttingi*)
Burrowing owl (*Athene cunicularia*)
California quail (*Callipepla gambelii*)
Common Raven (*Corvus corax*)
Golden eagle (*Aquila chrysaeotos*)
Horned lark (*Eremophila alpestris*)
House finch (*Carpodacus mexicanus*)
Ladder-backed woodpecker (*Picoides scalaris*)
Loggerhead shrike (*Lanus ludovicianus*)
Mourning dove (*Zenaida macroura*)
Northern harrier (*Cirrus cyaneus*)
Northern mockingbird (*Mimus polyglottos*)
Red-tailed hawk (*Buteo jamaicensis*)
Sage sparrow (*Amphispiza belli*)
Turkey vulture (*Cathartes aura*)
Western kingbird (*Tyrannus verticalis*)
Western meadowlark (*Sturnella neglecta*)
White crowned sparrow (*Zonotrichia leucophrys*)
White-throated swift (*Aeronautes saxatalis*)
Reptiles
Desert spiny lizard (*Sceloporus magister*)
Gopher snake (*Pituophis catenifer*)
Mojave rattlesnake (*Crotalus scutulatus*)
Side-blotched lizard (*Uta stansburiana*)
Western whiptail (*Cnemidophorus tigris*)

Table 3: Vascular Plants Detected During the ASP Surveys

FAMILY Species	Common Name	Habit
ASCLEPIADACEAE		
Asclepias vestita	Woolly milkweed	perennial
ASTERACEAE		
Ambrosia acanthicarpa	Annual bursage	annual
Ambrosia dumosa	White bur-sage	perennial shrub
Ambrosia salsola	Cheesebush	perennial shrub
Anisocoma acaulis	Scale bud	annual
Artemesia tridentata	Great-basin sagebrush	perennial shrub
Chrysothamnus nauseosus	Rubber rabbitbush	perennial shrub
BORAGINACEAE		
Amsinckia tessellata	Fiddleneck	annual
BRASSICACEAE		
Brassica toumeforti	African mustard	annual
Descurania pinnata	Tansy mustard	annual
Lepidium fremontii	Bush peppergrass	shrub
*Sisymbrium altissimum**	Tumble mustard	annual
CHENOPODIACEAE		
*Salsola tragus**	Russian thistle	annual
CUPRESSACEAE		
Juniperus californica	California juniper	shrub or tree
EPHEDRACEAE		
Ephedra nevadensis	Mormon tea	perennial shrub
EUPHORBIACAE		
Chamaesyce albomarginata	Rattlesnake weed	annual
GERANIACEAE		
*Erodium cicutarium**	Red-stemmed filaree	annual
LILIACEAE		
Yucca brevifolia	Joshua Tree	Tree
POACEAE		
Bromus madritensis ssp. *rubens**	Red brome	annual
*Bromus tectorum**	Cheat grass	annual
*Schismus arabicus**	Arabian grass	annual
SOLANAECEAE		
Datura wrightii	Datura	Annual or perennial

Appendix I
Cultural Resources Reports

CULTURAL RESOURCE SURVEY OF 600 ACRES OF LAND FOR THE ALTA VISTA SOLAR GENERATING STATION PROJECT SITE, LOS ANGELES COUNTY, CALIFORNIA

Submitted to:

California Energy Commission
Sacramento, California

Prepared by:

TETRA TECH EC, INC.

Fred E. Budinger, Jr. MA RPA, Principal Investigator/Author
Jenna Farrell, BA, Field Director/Author

10860 Gold Center Drive, Suite 200
Rancho Cordova, CA 95670
(916) 853-4575

Submitted by:

Alta Vista SunTower, LLC

August 2008

CONTENTS

EXECUTIVE SUMMARY ES-1

1.0 INTRODUCTION 1-1
- 1.1 Project Location 1-1
- 1.2 Project Description 1-2
- 1.3 Area of Potential Effect 1-5
- 1.4 Regulatory Compliance 1-5
- 1.5 Project Personnel 1-5

2.0 BACKGROUND 2-1
- 2.1 Natural Setting 2-1
- 2.2 Present and Past Land Use and Disturbance 2-2
- 2.3 Cultural Context 2-3

3.0 METHODS AND RESULTS 3-1
- 3.1 Archival Research Methods and Results 3-1
- 3.2 Native American Consultation Methods 3-1
- 3.3 Archaeological Survey Methods and Results 3-2
- 3.4 Solar Facility Site 3-2
- 3.5 Transmission Line Corridor/Access Road 3-2
- 3.6 Architectural Reconnaissance Methods (Built Environment) 3-3

4.0 CONCLUSION AND RECOMENDATIONS 4-1
- 4.1 Mitigation Measures 4-1
- 4.2 Preconstruction Assessment and Construction Training 4-2
- 4.3 Avoidance 4-2
- 4.4 Emergency Discovery 4-2
- 4.5 Site Recording and Evaluation 4-2
- 4.6 Mitigation Planning 4-3
- 4.7 Curation 4-3
- 4.8 Report of Findings 4-3
- 4.9 Designated Cultural Resources Specialist/Archaeological Monitor Qualifications 4-3

5.0 REFERENCES 5-1

Appendix F-1 Resumes

Appendix F-2 Environmental Data Report (Historic Aerial Photographs of Project area)

Appendix F-3 Confidential Record Search Results (Submitted Under Separate Cover)

Appendix F-4 Native American Consultation Letters

LIST OF TABLES

Table 1 Previous Cultural Resources Investigations within 0.50 mile of the Project APE 3-1

LIST OF FIGURES

Figure 1 Regional Location Map 1-3

Figure 2 Project Site 1-4

Figure 3. Proposed Project site current condition; plowed agricultural fields. 2-2

Figure 4. Disturbances include recent dumping of trash located on the western boundary of the proposed Project site 2-2

Figure 5 Archaeological Surveyed Area and 440 acre Project APE 3-4

ABBREVIATIONS AND ACRONYMS

AAB	Army Air Base
AAF	Army Air Field
APE	area of potential effect
Applicant	Alta Vista SunTower, LLC
B.P.	before present
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CHL	California Historical Landmarks
CHRIS	California Historical Resource Information System
CPM	Compliance Project Manager
CRHR	California Register of Historic Resources
DCRS	Designated Cultural Resources Specialist
DPR	Department of Parks and Recreation
EDR	Environmental Data Resource Inc.
GLO	Government Land Office
HRI	Historic Resources Inventory
MW	megawatt
NAHC	Native American Heritage Commission
NRHP	National Register of Historic Places
PHI	Points of Historical Interest
PRC	Public Resources Code
RCYBP	radiocarbon years before present
SBBM	San Bernardino Base Line and Meridian
SCCIC	South Central Coastal Information Center
SHPO	State Historic Preservation Office
Tetra Tech	Tetra Tech EC, Inc.
USGS	U.S. Geological Survey
WEAP	Worker Environmental Awareness Program

EXECUTIVE SUMMARY

Tetra Tech EC, Inc. (Tetra Tech) performed a cultural record, literature review, and a pedestrian Cultural Resource inventory of 600 acres of land for the proposed Alta Vista Solar Generating Station ("Project") in Lancaster, Los Angeles County, California (Figure 1, Regional Location). Alta Vista SunTower, LLC (the "Applicant") is filing an Application for Certification (AFC) from the California Energy Commission (CEC) to permit, install, and operate a 92 megawatt (MW) solar facility located on private land. The Applicant owns approximately 600 acres but only 440 acres will be used to build the proposed Project. The proposed Project site property is currently used for agricultural purposes.

The purpose of the study is to assist the Applicant in complying with the requirements of the California Environmental Quality Act (CEQA). Under CEQA an action may be considered to have a significant impact on cultural resources if it will cause a substantial adverse change to an historical resource or a "unique archaeological resource." Historical resources are those that are eligible for listing on the California Register of Historical Resources (CRHR), California Public Resources Code (PRC) §5024.1; Title 14, §4852 et seq., California Code of Regulations (CCR). The purpose of Tetra Tech's investigation is to determine the presence or absence of significant cultural resources within the area of potential effect (APE). The CEC is the lead agency under CEQA for the Project.

On February 27, 2008, and May 22, 2008, a cultural records and literature search was performed by the South Central Coastal Information Center (SCCIC). The search included a review of all recorded archaeological sites and previous archaeological investigations within one mile of the proposed Project site boundary and linear transmission line. The search identified two archaeological investigations and no previously recorded archaeological sites or isolates within one mile of the Project site. No previously recorded archaeological sites or isolates are within the Project APE.

Tetra Tech contacted the Native American Heritage Commission (NAHC) on February 25, 2008 to request a sacred lands file review of the Project area and a list of potentially interested Native American contacts (organizations/individuals) that may have knowledge of cultural resources within the Project area. The NAHC file review resulted in negative findings of cultural resources within the Project area. The NAHC also forwarded a list of Native American groups and/or individuals that may have knowledge of cultural resources in the Project area. A letter was sent out by Tetra Tech to each of these parties requesting information about such properties. To date, there have been no responses.

A total of 600 acres of the Applicant-owned land was originally surveyed, but only 440 acres will be used for the Project. The entire 440-acre Project site APE, including a 200-foot buffer per CEC regulations, was surveyed. Tetra Tech's archaeological field staff conducted a Cultural Resources Inventory of the proposed Project site and linear transmission line from April 19 to 22, 2008, and July 11 to 12, 2008. The entire Project area was surveyed utilizing 20 meter north to south transects. The survey area of the Project site is located within an agricultural field. The survey area along the linear transmission line is located adjacent to a dirt road within a Joshua tree habitat. Disturbances included recently plowed and/or fallow agricultural fields, a dirt bike track located within the southwestern portion of the Project site

(no longer visible on-site), road construction, and various modern trash. No cultural resources were observed within the APE.

1.0 INTRODUCTION

Tetra Tech EC, Inc. (Tetra Tech) performed a cultural record, literature review, and a pedestrian Cultural Resource inventory of 600 acres of land for the proposed Alta Vista Solar Generating Station ("Project"), Lancaster, Los Angeles County, California (Figure 2, Project Site). Alta Vista SunTower, LLC (the "Applicant") is filing an Application for Certification from the California Energy Commission (CEC) to permit, install, and operate a 92 megawatt (MW) solar facility located on private land. The Applicant owns approximately 600 acres but only 440 acres will be used to build the proposed Project. The proposed Project site property is currently used for agricultural purposes.

The purpose of the study is to assist the Applicant in complying with the requirements of the California Environmental Quality Act (CEQA). Under CEQA an action may be considered to have a significant impact on cultural resources if it will cause a substantial adverse change to an historical resource or a "unique archaeological resource." Historical resources are those that are eligible for listing on the California Register of Historical Resources (CRHR), California Public Resources Code (PRC) §5024.1; Title 14, §4852 et seq., California Code of Regulations (CCR). The purpose of Tetra Tech's investigation is to determine the presence or absence of significant cultural resources within the area of potential effect (APE). The CEC is the lead agency under CEQA for the Project.

On February 27, 2008, and May 22, 2008 a cultural records and literature search was performed by the South Central Coastal Information Center (SCCIC). The search included a review of all recorded archaeological sites and previous archaeological investigations within one mile of the proposed Project site boundary and linear transmission line. The search identified two archaeological investigations and no previously recorded archaeological sites or isolates within one mile of the Project site. No previously recorded archaeological sites or isolates are within the Project APE.

Tetra Tech's archaeological field staff conducted a Cultural Resources Inventory of the proposed Project site and linear transmission line from April 19 to 22, 2008, and July 11 to 12, 2008. No significant cultural resources were identified.

1.1 Project Location

The proposed 440-acre Project area is within an active/plowed and fallow agricultural field within a rural area northwest of the city of Lancaster, California (Figure 1, Regional Location). The southeast corner of the Project site is one mile north of the Neenach Substation located at the intersection of California State Route 138 (SR 138) and 210th Street West. The proposed one mile linear transmission route extends north from the Neenach Substation, along 210th Street West, to the southeastern corner of the Project site. The Project region is located within the Antelope Valley at the western most tip of the Mojave Desert. The Project location is described below:

Alta Vista Site Project Area—Township 8 North, Range 15 West, Section 7 of U.S. Geological Survey (USGS) 7.5' Neenach School, California quadrangle, San Bernardino Base Line and Meridian (SBBM) (Figure 2, Project site).

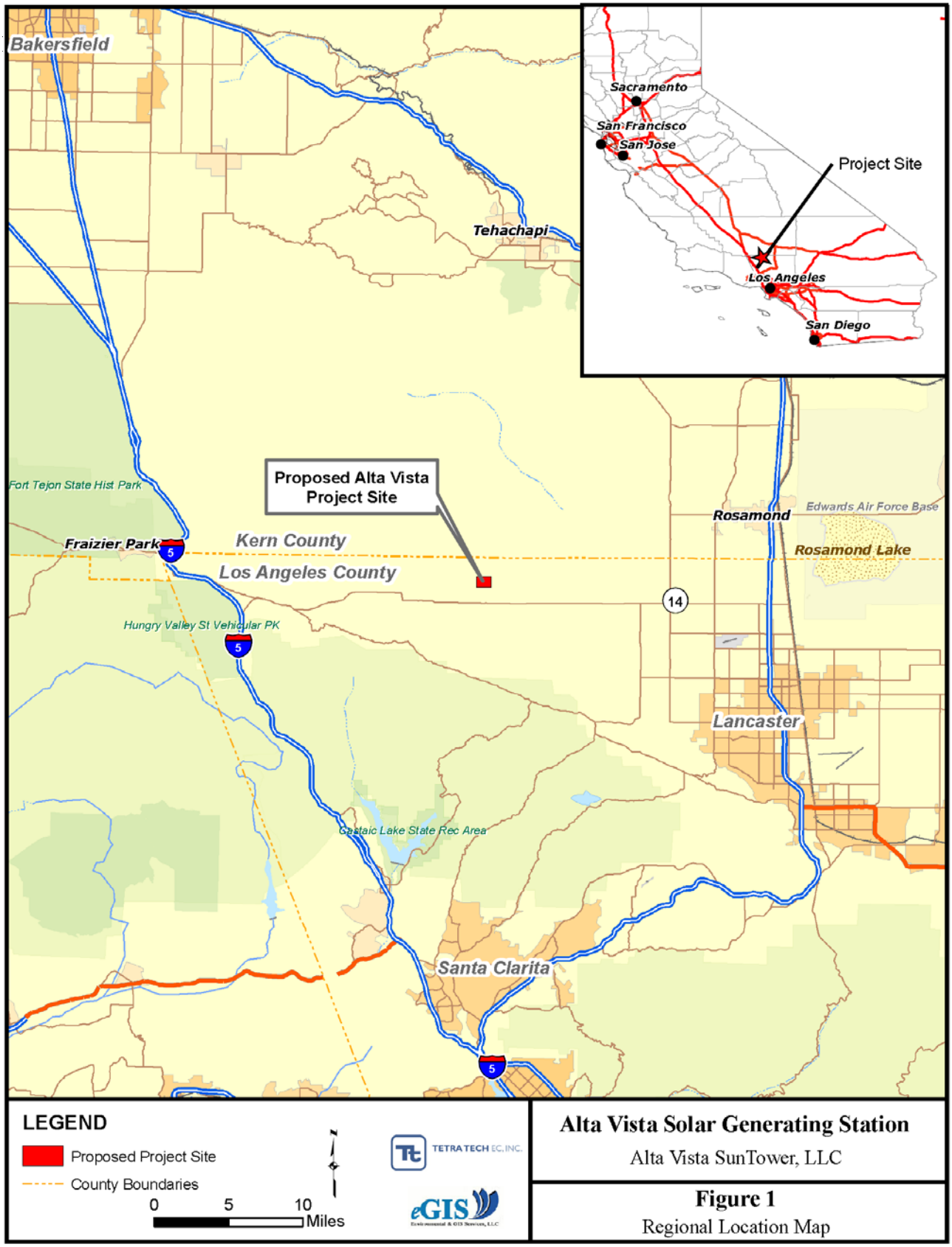
1.2 Project Description

The Applicant has secured site control and is currently in the permitting process to construct a 92 MW solar facility in Southern California. The Applicant will construct two solar power generation units consisting of 32 collector towers, an approximately one mile linear single-pole electrical transmission line interconnecting with Neenach Substation, and all-weather paving of one mile of an existing road (210th Street West) for access to the plant site.

The Applicant's power plants will utilize the solar power tower technology, employing a field of sun-tracking mirrors that reflect and focus sunlight onto a thermal receiver mounted atop a tower. Unlike all other solar tower installations to date, the Applicant employs a scalable approach to building large generation facilities by assembling incremental power "units". Each unit is composed of a series of heliostat mirror sub-fields, receiver towers, and a single centralized power block. In a typical unit, the steam generated from 16 tower-mounted solar receivers is routed to a 49 MW steam turbine generator.

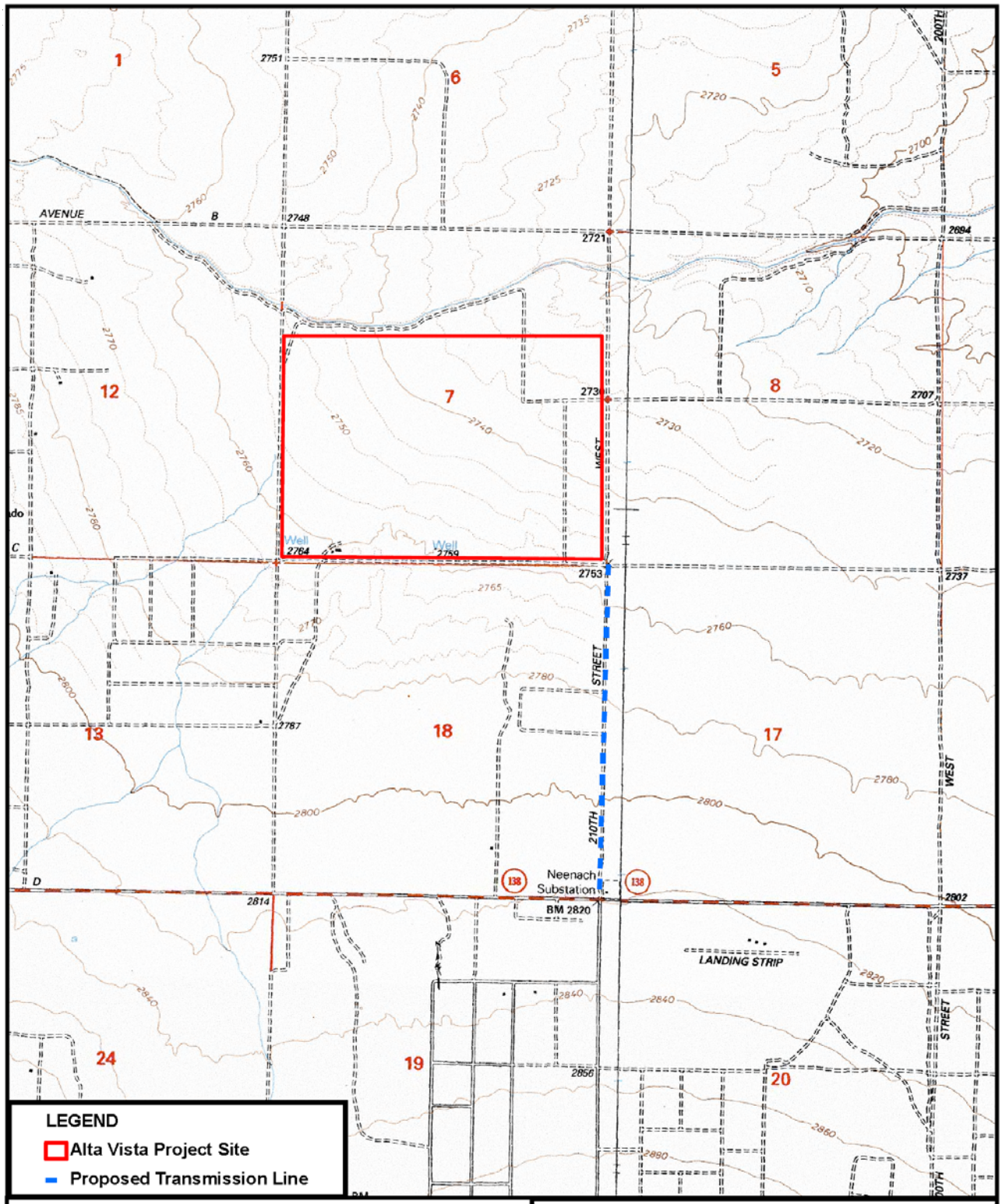
The proposed transmission line is approximately one mile long and will require approximately 23 single-circuit pole structures. The existing access road will be paved and extends one mile north from SR 138 along 210th Street West to the Project site. The road will be approximately 20 feet wide per county requirements.

The proposed 440 acre Project site will include approximately 380 acres of permanent ground disturbance and includes the fenced area of the power generation facility, the switchyard, the detention basin area, plant access road, and transmission line. The entire Project site will be graded and no subsurface excavation is required. The proposed temporary ground disturbance at the Project site and transmission line consists of approximately 60 acres and includes the construction office, equipment laydown area, and vehicle parking.



Alta Vista Solar Generating Station
Alta Vista SunTower, LLC

Figure 1
Regional Location Map



USGS Topographic Map - Neenach School
Township 8N, Range 15W, Sections 7 & 18.

1:24,000 scale

0 0.25 0.5 Miles

Alta Vista Solar Generating Station
Alta Vista SunTower, LLC

Figure 2
Project Site

Construction Schedule

The construction sequence for power plant construction includes the following general steps:

- ***Month 1—Mobilization:*** The contractor will mobilize approximately one month after Project certification and the start of construction will include gravelling of temporary roads, laydown areas, and work areas. Mobile trailers or similar suitable facilities (e.g., modular offices) will be used as construction offices for contractor and subcontractor personnel. A security fence will be installed around the plant site boundary, including the laydown area.
- ***Month 2 to 3—Site Preparation and Grading:*** This includes detailed construction surveys, mobilization of construction staff, grading, and preparation of drainage features. Grading for the solar field and power block areas.
- ***Month 3 to 5—Foundations:*** This includes excavations for large equipment (tower bases, cooling tower, etc.), and ancillary foundations in the power block.
- ***Month 4 to 9—Major Equipment Installation:*** Once the foundations are complete the larger equipment will be installed. The solar field components will be assembled in an onsite erection facility and installed on their foundations.
- ***Month 6 to 12—Balance of Plant:*** With the major equipment in place, the remaining field work will be piping, electrical, and smaller component installations.
- ***Month 8 to 10—Transmission Line:*** Construction of the transmission line.
- ***Month 12-13—Testing and Commissioning:*** Testing of subsystems will be done as they are completed. Major equipment will be tested once all supporting subsystems are installed and tested.

The proposed Project will be online by winter of 2010.

1.3 Area of Potential Effect

For the purpose of this study, the proposed site APE consists of a 440-acre Project site, and approximately one mile of linear transmission line and access road along 210th Street West (from Neenach Substation north to the southeastern corner of the Project site).

1.4 Regulatory Compliance

The purpose of the study is to assist the Applicant with the requirements of CEQA. Under CEQA an action may be considered to have a significant impact on cultural resources if it will cause a substantial adverse change to an historical resource or a "unique archaeological resource." Historical resources are those that are eligible for listing on the CRHR (PRC §5024.1; Title 14, §4852 et seq., CCR). The purpose of Tetra Tech's investigation is to determine the presence or absence of significant cultural resources within the APE.

1.5 Project Personnel

The following personnel will be participating in the inventory and report preparation (resumes are provided in Appendix F-1):

Fred Budinger M.A., RPA, Principal Investigator—Mr. Budinger is a Registered Professional Archaeologist with 32 years experience in archaeology and cultural resources management. Mr. Budinger meets the qualifications of the Secretary of the Interior's Professional Standards for Archaeology.

Jenna Farrell, Associate Archaeologist/Field Director—Ms. Farrell has a Bachelor of Arts in Anthropology and 8 years experience in archaeology and cultural resource management.

Ben Ludwig, M.A., Archaeological Technician—Mr. Ludwig has over 5 years experience as an archaeology technician and cultural resources management.

Erica Maier, Archaeological Technician—Ms. Maier has a Bachelor of Arts in Anthropology and 7 years of experience in archaeology and cultural resource management.

Arabesque Said, Archaeological Technician—Ms. Said has a Bachelor of Arts in Anthropology and over 2 years of experience as an archaeological technician.

Valerie Parker, Archaeological Technician—Ms. Parker has Bachelor of Arts in History over 5 years experience as an archaeology technician.

2.0 BACKGROUND

This section briefly describes the general environment, prehistory, ethnology, and history of the Project vicinity.

2.1 Natural Setting

The Project area is located within the western Mojave Desert, within the Antelope Valley. The Antelope Valley is a large triangularly-shaped basin formed between the Leibre Mountains to the west, the Tehachapi Mountains to the north, and the San Gabriel Mountains to the south. To the east, the valley expands to join the greater Mojave Desert. This region is characterized by interior-draining basins separated by mountain ranges. The basins drain into broad, flat playas that collect water in the winter and dry out in summer. Playas are the lowest lying areas in the Antelope Valley, and are composed primarily of fine clays and silts. Rosamond and Rogers dry lakes (playas) are east of the Project area. The elevation in the valley itself ranges from 692 to 1,067 meters (2,270 to 3,500 feet) above mean sea level (amsl). The vegetation of the region consists of various arid-land communities, the most prolific of which are the Joshua tree woodland, creosote scrub, and saltbush scrub. The immediate Project area is within fallow and working agricultural fields of loose sandy and gravel soils. A large unnamed dry wash is north of the Project boundary.

The Mojave Desert supports a diverse and fragile ecosystem with a varied number of plant communities. The most characteristic plant of the Mojave Desert is the creosote bush (*Larrea tridentate*), which dominates as much as 70 percent of the region (Barbour and Dwight 1999). In the Project area and vicinity these vegetation zones include Joshua tree (*Yucca brevifolia*) woodland community, creosote brush (*Larrea tridentate*), brittlebush (*Encelia farinosa*), and saltbrush (*Atriplex* sp.) scrub. The Joshua tree woodland is characterized by an overstory of Joshua tree (*Yucca brevifolia*) and an understory of various shrubs and herbs, occurring at elevations intermediate between the creosote scrub and juniper woodland communities; Joshua trees are also present as scattered individuals within the desert saltbush scrub (Barbour and Dwight 1999).

Wildlife in the western Mojave can include mammals such as kangaroo rat (*Dipodomys* spp.), desert cottontail (*Sylivlagus audobonii*), jackrabbit (*Lepus californicus*), bobcat (*Lynx rufus*), coyote (*Canis latrans*), mule deer (*Odocoileus hemionus*), and several species of bat (cf. Chiroptera). The desert is also host to a number of reptiles, particularly snakes and lizards, such as the desert tortoise (*Geopherus agassizzi*), flat-tailed horn lizard (*Phrynosoma mcallii*), and the western diamondback (*Crotalus altrox*). A diverse array of passerines (songbirds), raptors, and other birds inhabit the region. Some examples include sparrows (*Emberizidae* spp.), mourning dove (*Zenaida macoura*), Gambel's quail (*Callipepla gambelii*), the American kestrel (*Falco sparverius*), cactus wren (*Campylorhynchus brunneicappillus*), red-tail hawk (*Buteo jamaicensis)*, and the road runner (*Geococcyx californianus*). Other miscellaneous fauna in the Project area include amphibians and numerous insects such as ants, beetles, grasshoppers, and crickets.

2.2 Present and Past Land Use and Disturbance

The present land use of the Project area consists of a residence at the southwestern corner of the site, currently plowed and growing carrot fields, a section of fallow fields (approximately 60 acres), and the Neenach Substation (c. 1950s) (Figure 3). In addition, modern trash (e.g. computer parts, house hold items, plastic 5-gallon buckets, metal) was noted along 220th Street West at the western portion of the Project area (Figure 4).

Figure 3. Proposed Project site current condition; plowed agricultural fields.

Figure 4. Disturbances include recent dumping of trash located on the western boundary of the proposed Project site.

Historic aerial photographs provided by Environmental Data Resource Inc. (EDR) illustrate that the entire Project area has been used for agricultural purposes since 1952 (except for a small portion in the southwestern corner where there is a structure/house). In addition, the photographs reveal that approximately 15 acres of the southwestern portion of the Project site was used as an off-road vehicle/motorcycle course. See Appendix F-2 for the EDR report and aerial photographs.

2.3 Cultural Context

This section provides a generalized overview of the cultural landscape of the region. The Mojave Desert has experienced large-scale environmental change during the Pleistocene and Holocene, and some of which has had profound effects on human adaptation within the region. The archaeological and ethnographic records provide evidence of changing subsistence and settlement strategies in response to general trends toward increasing aridity. Understanding such strategies may provide insights useful in efforts to target late-Pleistocene/early-Holocene sites. The basic cultural sequence of the Mojave Desert has been fairly well-established. The discussion below follows the chronology outlined by Warren (1980a, 1984, 1986; Warren and Crabtree 1986).

2.3.1 Late-Pleistocene/Early-Holocene Prehistory (12,000 to 7,000 B.P.)

The Lake Mohave Period in the southwestern Great Basin comprises a regional manifestation of the so-called Paleo-Indian tradition. The complex includes robust, stemmed projectile points, leaf-shaped bifaces, crescentics, step-edged unifacial scrapers, and small numbers of heavier core-cobble implements (Campbell et al. 1973; Hunt 1960; Rogers 1939, 1966; Wallace 1962; Warren 1967, 1984; Warren and Ranere 1968). Fluted and non-fluted concave-base points (cf. western Clovis) commonly occur in general association with the characteristic stemmed point forms, but it remains uncertain whether the two morphologies relate to the same occupations (Basgall and Hall 1993). Milling equipment has generally been claimed to be absent from Lake Mohave components, but recent investigations in a variety of locations suggests they occur in small, but regular numbers. An absolute chronology has been difficult to establish for this complex; most discussions of the Mojavean evidence built around radiometric dates made well outside the region (Bedwell 1973; Hester 1973; Layton 1970). Dates of 9,500-8,000 radiocarbon years before present (RCYBP) have been obtained from several contexts at Fort Irwin, China Lake, and Twenty-nine Palms, and source-specific obsidian hydration measurements from an even larger number of sites are consistent with a span of perhaps 10,000-7,500 B.P. (Basgall 1993a, 1993b, 1995).

Lake Mohave components remain comparatively uncommon in the southwestern Great Basin (Antevs 1952; Campbell et al. 1973; Davis and Panlaqui 1977; Meighan 1981; Pendleton 1979; Tuohy 1974), but management efforts at a host of military installations have helped fill this void and such sites now appear to be more widespread than once supposed. A tendency for early Holocene archaeology to occur along the margins of extinct lakes has led a generation of researchers to equate early adaptive patterns with focal exploitation of such habitats (Bedwell 1973; Hester 1973; Moratto 1984). It is more and more evident, however, that Lake Mohave manifestations occur in a wide variety of other contexts, that few pluvial lakes of the southwestern Great Basin/Mojave Desert supported rich lacustrine habitats, and that there is no technological link between the kinds of tools found in these assemblages and

the resources surmised to have occurred in lakeshore settings (Basgall 1993a, 1993b, 2000; Basgall and Hall 1992; Basgall and McGuire 1988;). Instead, it appears that playa-associated assemblages reflect one settlement mode of a more generalized hunting and collecting adaptation, and that spatial data for early Holocene deposits is likely biased by problems of site visibility and the differential preservation of old sediments (Basgall 1993a, 1993b). Faunal collections from Lake Mohave sites are dominated by small taxa (lagomorphs, rodents, reptiles) characteristic of desert scrub communities rather wetland habitats.

2.3.2 Middle-Holocene Prehistory (8,000 to 4,000 B.P.)

Succeeding Lake Mohave in the regional sequence is a complex of materials referred to as Pinto (Pinto-Gypsum in Rogers' [1939] scheme). These assemblages contain a variety of weakly shouldered, indented base, stemmed points such as Pinto (Little Lake, Bare Creek, Gatecliff) series, large and small leaf-shaped bifaces, domed and keeled unifaces, flake tools, and substantial numbers of core-cobble tools (Basgall and Hall 2001; Campbell and Campbell 1935; Hunt 1960; Rogers 1939; Wallace 1962; Warren 1984). Millingslabs and handstones clearly occur in Pinto assemblages, but their role in the economy has been the subject of debate. Carbon dates with similar projectile points in the central and northern Great Basin generally fall between 5,000-3,300 B.P. (Bettinger and Taylor 1974; Holmer 1986; Thomas 1981), but obvious morphological and technological distinctions between variants from the Mojave Desert and more northern sectors of the Great Basin complicate cross-dating. Warren (1980b, 1984; Warren and Crabtree 1986) has suggested that Pinto assemblages appear as early as 7,000 B.P. and persist until ca. 4,000 B.P. Jenkins (1987) pushes the initial date back still farther, to 8,000-8,400 B.P., and Basgall (1995; Basgall and Hall 2001) would allow for perhaps 7,500-8,000 years antiquity.

Few sites containing major Pinto components have been reported in detail (Campbell and Campbell 1935; Harrington 1957; Hunt 1960; Meighan 1981; Rogers 1939, 1966; Smith 1963). Recent work at Deadman Lake and in the Lead Mountain training area at the Marine Corps Air Ground Combat Center at Twentynine Palms have identified major Pinto-age residential complexes rivaling those found in other sectors of the Mojave Desert. Only a decade ago, Warren and Crabtree (1986) were able to characterize most Pinto sites as low-density surface scatters representing seasonal camps of highly mobile populations, often occurring along fossil streams and lakeshores, and adjacent to springs (Rogers 1939; Wallace 1962). Today such a portrayal would seem inconsistent with the large number of extensive deposits and site complexes being discovered across the southwestern Great Basin.

Pinto subsistence patterns have been portrayed as having greater breadth than during the Lake Mohave period. Large game hunting continued as the subsistence focus, but vegetal use and small animal exploitation increased as environmental conditions deteriorated (with the Altithermal) and artiodactyl productivity decreased (Warren 1980, 1984; Warren and Crabtree 1986). In response to presumed changes in resource structure, a shift toward enhanced logistical organization has been inferred (Warren 1986:2.48), depressed population densities and changes in group organization contributing to development of fewer, less extensive sites. Excluding the shift to indented-base projectile point forms, the structure of Pinto flaked stone assemblages parallels earlier ones. Empirical data suggest that faunal inventories remain of comparable composition and breadth during this period, small game

(e.g., rabbits, hares, rodents, and reptiles) still comprising dominant taxa (Basgall 1990a, 1990b; Basgall and Hall 1990, 1992, 1993; Douglas et al. 1988). Artiodactyl remains are scarce in most assemblages, but in a few places appear to increase very slightly in relative abundance. It is in regard to milling technology that Pinto assemblages deviate most from their precursors. Found in all known major Pinto components, ground stone frequencies are comparable to those of later periods, implying that middle Holocene populations across the Mojave Desert were full-fledged, broad-spectrum foragers.

In the Antelope Valley, most Pinto sites have been identified in the northern portion of the valley near springs and extinct rivers (Norwood 1987).

2.3.3 Late Holocene Prehistory

Archaeological patterns characterizing the last 4,000 or so years of Mojave Desert prehistory show a great deal of temporal and spatial variation. Two main themes punctuate most discussions of the late Holocene record: first, the intensification of indigenous land-use strategies during the late Holocene, looking at the effects of environmental change, population dynamics, and innovations in subsistence-settlement organization and technology; and second, the influence of cultural developments in the Southwest on lifeways in the Mojave Desert, interactions manifest in long-distance trade connections, trait diffusion, and in at least some cases, residential use of certain areas by extra-regional groups. Cultural relationships between the Mojave Desert and areas to the east and southeast have a long and complex history. Split-twig figurines at Newberry Cave are remarkably similar to those from Arizona (Davis and Smith 1981), indicating that interaction with Southwestern cultures (perhaps in the form of shared socio-religious customs) may date at least as early as 3,300 B.P. More tractable connections are evident in the presence of Anasazi ceramics at sites in the northeast Mojave Desert after roughly 1,100-1,200 B.P. Rogers (1929) reported Anasazi sherds as far west as Cronese Basin and their occurrence, along with quarrying tools, at turquoise sources near Halloran Spring (Leonard and Drover 1980), may reflect visitation by specialized trading or material acquisition parties. Relationships shifted to the south during the later prehistoric period, which supplied lower Colorado buff wares to the region into historic times.

Warren (1984; Warren 1986) proposed that with return to more ‘favorable’ environmental conditions soon after the Pinto period, there was an increase in the productivity of artiodactyls. Large game hunting re-emerged as an economic focus in response to this potential, but the intensification of plant exploitation (especially mesquite) continued (Hunt 1960; Wallace 1962). These subsistence trends continue until about 700 B.P., when artiodactyl over-exploitation necessitated further expansion of dietary breadth to include a wider range of vegetal products; plants first assume a dominant economic role at this time (Warren 1986). This characterization seems supported by data from many parts of the Mojave Desert, showing a continued expansion in the use of high cost/low return resources and high cost/ high return procurement and processing strategies.

Gypsum Period

The Gypsum Period (4,000 to 1,500 B.P.) appears to have begun with the so-called Little Pluvial, a thousand year long moist period between ca. 4,000 B.P. and 3000 B.P. This was a

time when people diversified their subsistence-settlement strategies (Warren 1984:414-420) as manifest in the extensive use of manos and metates, the appearance of the mortar and pestle, and introduction of the bow and arrow near the close of the period. Increased trade also played a role in this desert adaptation, as did participation in the aforementioned magico-religious hunting rituals.

Diagnostic projectile points of the Gypsum Period include the Humboldt Concave Base, Gypsum Cave, Elko Eared, and Elko Corner-notched (Amargosa I) types (Warren 1984:414-415, 1986:188). Other artifacts include leaf-shaped projectile points, knives with rectangular bases, drills, scrapers, large scraper planes, choppers, shaft smoothers, incised sandstone and slate pendants and tablets, drilled slate tubes which may have served as pipes, and hammerstones. Manos and metates are common during this period, suggesting a greater reliance on hard seeds. The mortar and pestle were first introduced into the Mojave Desert during the Gypsum Period, likely for mesquite processing. Shell beads of *Haliotis* and *Olivella* indicate interaction with coastal populations. Diagnostic Amargosa type projectile points provide the first evidence of cultural influence from the Southwest at about 2250 B.P. Perishable artifacts were found in Newberry Cave in evident association with Gypsum Cave and Elko projectile points (Davis and Smith 1981). Among the items recovered were an atlatl hook, atlatl dart main and foreshafts, sandals, cordage, a sheep dung pendant fashioned of droppings wrapped in sinew, tortoise shell bowls, and split-twig figurines thought to have served in hunting rituals. Each figurine was fashioned of a single willow branch that had been split, folded, and woven so as to create a small representation of an animal. Similar figurines have been found at other sites in California, Arizona, Nevada, and Utah, where radiocarbon dates range from 4,145 B.P. to 1,405 B.P. Figurines at Newberry Cave date to 3,020 B.P. Gypsum Period deposits are widespread, having been excavated at Gypsum Cave (Harrington 1933), Newberry Cave (Davis and Smith 1981), Stuart Rock Shelter (Shutler et al. 1960), Willow Beach, Rose Springs (Lanning 1963; Clewlow et al. 1970), Ray, Baird, and Chapman Caves (Hillebrand 1972, 1974; Panlaqui 1973), O'Mallery Shelter and Conway Cave (Fowler et al. 1973), Etna Cave (Wheeler 1973), and the Indian Hills Rock shelter (Wallace 1962).

Saratoga Springs Period

The Saratoga Springs Period (1,500 to 800 B.P.) was a time of further cultural differentiation in the eastern, northwestern, and southern Mojave Desert, corresponding to the era of major Basketmaker III-Pueblo development in the Southwest (Cordell 1984). Assemblages of this period are characterized by small corner-notched (e.g., Rose Spring), basally-notched (e.g., Eastgate), and triangular (e.g., Saratoga Springs Triangular) arrow points, abundant ground and battered stone, and a variety of bead and ornament types. Southwestern pottery types appeared in the eastern Mojave Desert between 1,500 and 800 B.P. (Warren 1986:189). It has been hypothesized that the eastern Mojave Desert had a scattered but permanent Puebloan population between approximately 1,200 and 900 B.P., evidenced by Anasazi Gray Ware pottery at sites such as Halloran Springs (Rogers 1929; Leonard and Drover 1980:251-252), China Ranch, and Ash Meadows (Hunt and Hunt 1964). At Halloran Springs, hundreds of small mines were dug for turquoise exploitation, some of which has been chemically identified in the Gila Butte phase (A.D. 500-A.D. 700) at Snaketown (Sigleo 1975). Rogers (1929) reported a few turquoise chips as far west as Crucero and the Cronese basin.

The Oro Grande site near Victorville contains evidence of a non-ceramic Yuman-like occupation (Rector et al. 1983). Radiocarbon dates of A.D. 500 and A.D. 1,500 bracketed a midden deposit. The artifacts recovered included Cottonwood series projectile points, manos and metates, mortars and pestles, incised slate pendants, shell ornaments, and lithic knives, drills, and perforators.

Late Prehistoric Period

Defining characteristics of the Late Prehistoric/Protohistoric Period (700 B.P. to Contact) in the Mojave Desert are Desert Side-notched projectile points and various types of brown ware pottery, including Owens Valley Brown (Warren 1986). Important sites and components of this age include the Cottonwood Creek site in Owens Valley, the upper component at Rose Spring, Colville Rockshelter and several sites in the Indian Ranch area of Panamint Valley, Chapman II phase components of sites in the Coso Range, Death Valley IV sites, China Ranch, and Shoshone and Rustler's Rockshelters. Marker artifacts include Desert Side-notched and Cottonwood series projectile points, along with small steatite disk beads and Owens Valley Brown Ware pottery. The consensus is that Paiute populations used such artifacts. Assemblages of the eastern Mojave Desert are broadly similar, prompting Warren (1986) to suggest Paiute groups were moving into the region by 900 B.P.

The protohistoric pattern is somewhat different in the southern Mojave Desert. The Mojave River valley became increasingly important during this period as a trade route. Sites firmly attributed to the Shoshonean-speaking Serrano of historic times manifest attributes of Yuman-speaking cultures to the east. Brown and buff pottery that first appeared in the Lower Colorado River region about A.D. 800 also occurs in the southern Mojave Desert during this period.

Major late period village sites within and surrounding the Antelope Valley include CA-LAN-488 and CA-KER-303 (both contained deep middens and cemeteries), the Fairmount Butte site CA-LAN-292, the Cottonwood Creek sites, CA-KER-303/733, Nettle Springs CA-KER-230/508, Edwards Air Force Base sites CA-LAN-1296 and CA-KER-1922, CA-LAN-483 in Juniper Hills, Lovejoy Buttes CA-LAN-192, and a site west of Rosamond and a site near Palmdale (Pacific Legacy 2007:23). When seasonal resources became available such as Mesquite beans and rice grass, small parties would leave the village sites to collect, harvest, and process the resource. These smaller and temporary/special-use sites include lithic scatters, milling and processing sites, and rock rings. No late period sites have been recorded within the immediate Project vicinity.

Late Prehistoric artifact assemblage include items such as the desert side-notched and cottonwood triangular projectile points, shell beads, ground stone, steatite disk beads, and Owens Valley Brown Ware pottery.

Ethnographic Background

The Project site is situated within the ethnographic Kitanemuk territory (Blackburn and Bean 1978; Kroeber 1925; Sutton 1996). Very little recorded ethnographic and/or archaeological information exists about the Kitanemuk, but available records indicate that they were culturally similar to the Yokuts to the north and the inland Chumash (Blackburn and Bean

1978; Kroeber 1925). The Kitanemuk occupied areas along streams within portions of the Tehachapi Mountain foothills, the northern slope of the Liebre and Sawmill Range, to the northwestern portion of the Antelope Valley and Mojave Desert. Interactions with other tribes included the Vanyume (east), Tataviam (south), Yukuts (northwest), and the Chumash (west), and they also engaged in trade relations with the Mojave and Quechan (Blackburn and Bean 1978; Kroeber 1925).

The Kitanemuk economic subsistence was most likely based on available resources in their territory, such as pine nuts and acorns, mesquite, various roots and seeds, and small game. It is uncertain whether the Kitanemuk utilized streams, creeks and/or lake beds for fishing and hunting waterfowl (Sutton 1996). Scholars (Blackburn and Bean 1978; Kroeber 1925; Sutton 1996) suggest that the Kitanemuk settlement pattern consisted of semi-permanent village sites within the Tehachapi Mountains and smaller special use/temporary sites focused around natural resource availability in the foothills and desert valley. Each village had a well-developed social and political structure that included a chief, a ceremonial manager, messengers, shamans, and diviners (Blackburn and Bean 1978:567). At the time of European contact, the Kitanemuk population was estimated at 500-1,000 individuals (Blackburn and Bean 1978). They were removed from their territorial lands in the late 1700s to early 1800s and absorbed into the Spanish Mission system at Mission San Fernando, San Gabriel, and possibly Ventura (Bean and Smith 1978:570). By the 1850s, records indicate that some Kitanemuk were present at the Rancho Tejon Indian Reservation and the Tule River Reservation.

2.3.4 History

Documented historic-era resources in the Project area are associated chiefly with the various industries that developed here from the mid-1800s to the mid-1900s. The industrial history of the Project area can be divided into several historic themes: agriculture, ranching, railroads, and other transportation-related industries. The following is a brief summary of the regional history to provide context for the possible site types encountered during an archaeological inventory.

The Mojave Desert was primarily used as a transportation route during the early historic times. Several trails, roads, and eventually rail lines crossed the vast desert providing a means of travel for a variety of people (Native American, Explorers, Spanish, Mexican, Euro-American, etc.). Although the desert appears barren, it is rich in resources available to those who knew how to utilize them.

The Spanish arrived in the late 1700s and began establishing missions throughout California until the late 1800s. The Spanish often encountered conflicts with the aboriginal population that lead to warfare. Fur trappers and Euro-Americans began to cross the desert in the early to mid 1800s. The Gold Rush era instigated the railroad and surveyors began plotting a route for the transcontinental railroad. By the 1860s, the Project vicinity's main historical developments were ranching and mining.

The early history of the Antelope Valley is characterized by cattle grazing, minor prospecting, and hunting expeditions. Settlement in the valley began after the construction of the Southern Pacific Railroad. The town of Lancaster was established by M.L. Wicks and

named after his hometown in Pennsylvania. Several homesteaders were drawn to the valley and produced successful orchards and small farms. A drought at the end of the century rendered much of the land useless and many of the farmers moved on.

Hispanic Period

The earliest historic records for the Project area are the accounts of Spaniards who explored within the region beginning in the late 1700s. The Franciscan Missionary priest, Father Francisco Gracés, crossed the Mojave Desert and Antelope Valley in 1776 with the assistance of a Gabrielino Indian interpreter and Mojave Indian guides (Earle 2002). He was searching for a straight route from the Colorado River to Monterey.

Following the independence of Mexico from Spain and the secularization of the Spanish missions in 1834, most of the land in the Project area was parceled out by Mexican governors as large land grants, or "ranchos", primarily, but not exclusively, to "Californios" (second generation, native-born descendants of early soldiers and civil servants under Spanish and then Mexican rule). The historic rancho "La Casa del Rancho La Liebre" was granted to Jose Maria Flores, a Mexican War veteran, in 1846 and is approximately 20 miles southwest of the Project area. Much of the original rancho was within mountainous terrain at the northwestern portion of present day Los Angeles County. The 48,799-acre rancho was eventually purchased by Edward F. Beale in 1855. Beale grazed sheep with partner Robert Baker at the rancho.

Between 1855 and 1857, most of the Mojave Desert was surveyed into townships and sections under the supervision of the Government Land Office (GLO). After 1857 the landscape of the Mojave Desert changed as army posts, way stations, settlements, ranches, and mining camps were established.

Mining

Many small-scale and short-term gold and silver mining activities in the Antelope Valley began in the 1860s. These historic mining operations are typically only represented by claim markers, shaft, adits, or similar, simple, or undeveloped features (Puckett et al. 2006). In 1898, Borate was discovered in the mountains surrounding the Antelope Valley. Today, the town of Boron is the site of one of the world's largest Borate mining operations.

The Mojave-Rosamond Mining District is located between the present day towns of Mojave and Willow Springs (northeast of the Project area) and produced larger scale mining operations. This district included mines such as, the Yellow Dog and Whitmore at Standard Hill, and Elephant, Elephant Eagle, Silver Queen, and Golden Queen mines on Soledad Mountain (Pacific Legacy 2007). These mines peaked in production from 1931-1942.

Mining played a considerable role in the economic development of the region, the establishment of small settlements and towns, and the development of transportation routes (Hill 1912; Perris and Lever 1896; Settle 1965; 1967; Vrendenburgh et al. 1978).

Railroad

In 1853 Lieutenant R.R. Williamson led a survey of the possible routes for the transcontinental railroad through Southern California. By 1866, Congress had authorized railroad land grants under the Pacific Railway Acts of 1862 and 1864 to the Atlantic & Pacific (A&P) and Southern Pacific Railroads. By 1876, Southern Pacific Railroad had completed its line from Bakersfield south, through the Antelope Valley, west, to Los Angeles (Love et al. 1995).

Agriculture

Ranching and farming emerged in the Antelope Valley during the 1870s and 1890s (Settle 1967; Bard 1972). Elias Dearborn was among the first settlers in the region. Dearborn ran livestock near Rosamond Dry Lake at Indian Springs (Indian Water) and constructed one of the earliest water wells in the Valley at Indian Springs (Puckett et al. 2006). Cattle and sheep were the primary livestock raised by ranchers. Agricultural corps in the valley included wheat, barely, and various fruit bearing trees.

By the late 1800s, homesteaders were drawn to areas like the Antelope Valley where cheap land and irrigation could be obtained. As a result, between 1884 and the late 1880s, the towns or "colonies" of Lancaster, Palmdale, Acton, Alpine, and Sand Creek (present day Rosamond) were attracting settlers, where they could practice dry-farming methods, livestock and poultry operations, orchard and vineyard production, and mining activities (Puckett et al. 2006).

Ranchers and farmers encountered several environmental obstacles in the Antelope Valley that made operational practices less than ideal. Several droughts occurred in the valley between the 1880s to the 1930s that impacted grazing and crop production. In addition, many areas in the region were plagued with jackrabbits that would feast on crops and leave little behind to harvest. Many ranchers and/or farmers in the valley had to supplement their income with other endeavors such as mining or identify crops that were resilient to the desert environment. By the 1920s, alfalfa was the major crop grown in the Antelope Valley. During the middle of the twentieth century, much of the agricultural land was absorbed for military use.

Military Era

The dry lake beds attracted both civilian and military aviators in the 1920s and 1930s as a location for testing their planes. At that time, the Antelope Valley became the center of military activities associated with the Army Air Corps, which established the Muroc Bombing and Gunnery Range on the eastern shoreline of Rogers Lake between 1931 and 1940. In 1942, the range was renamed Army Air Base, Muroc Lake (south base) and Materiel Center Flight Test Base (north base), followed by Muroc Army Air Field the following year. Growth during World War II led to the establishment of the Muroc Air Force Base (1948), and finally the re-designation of the facility as Edwards Air Force Base by 1949 (Puckett et al. 2006).

Lancaster, California

Lancaster, California was named by the Southern Pacific Railroad Company when it laid its track through the area in the summer of 1876 (City of Lancaster 2008). The first facilities constructed were lodging for employees. In 1882, a Mr. Nickolas Cochran passed through by train and recognized the areas' agricultural possibilities.

The first artesian well was developed in 1883 to provide water for locomotives. Soon after, men from Sacramento purchased land from the railroad company and prepared to colonize the valley. A year later, M.L. Wicks purchased 60 sections from the railroad company for $2.50/acre and platted streets and lots (City of Lancaster 2008). Soon after, an England based company started employing Chinese to harvest yucca for the production of newsprint paper for the London Daily Telegraph. This operation did not last long.

In 1886, Lancaster and the Antelope Valley region were falsely advertised in the London newspaper. Pictures depicting immense berries and other fruits grown in this agricultural paradise were published (using money from the railroad) with the idea of attracting new settlers. The ploy worked and by 1887 settlers started pouring in to the region (City of Lancaster 2008).

In the summer of 1888, M.L. Wicks sold the townsite (with the exception of a few lots and blocks) to James P. Ward for $46,620 (about $20.00/acre) (City of Lancaster 2008). The townsite was a square mile and sufficient to be subdivided into about 2,000 housing lots at an average price of less than $7.00 each. In 1890, Lancaster built a grammar school for local children. The early 1890s were times of heavy rainfall causing the local alfalfa farmers to prosper (City of Lancaster 2008). The year of 1893 was particularly thriving: more than 60,000 acres skirting the foothills were planted with wheat and barley. That year, some 730 carloads of grain were brought to Lancaster to be shipped to Los Angeles (City of Lancaster 2008).

Drought years returned in 1894 and lasted through 1897 (City of Lancaster 2008). Local range land could not support cattle and they had to be driven north; by 1897, almost all human inhabitants had left the area. While most businesses came to a standstill, the discovery of gold near Rosamond by Ezra Hamilton did provide some employment. In 1898, borax from the Frazier Park area was hauled to Lancaster and then shipped by rail to San Pedro.

Los Angeles Evening Herald newspaper staffer Sally Rotherie conceived the idea of acquiring lots in Lancaster in 1910, and giving away a 25 feet by 125 feet lot parcel with a year's subscription to the paper (City of Lancaster 2008). In 1912, the Antelope Valley Union High School was finally established. Electrical power was installed in 1914 and, by 1925, 878 homes had electricity. By 1916, the city had two paved streets.

The census of 1920 indicated Lancaster had a population of 400 residents; in 1930 there were 1,550. A volunteer fire department numbering about 20 men was organized in 1921. The Antelope Valley Hospital opened the following year. The first paved road to Los Angeles,

the Mint Canyon Highway, was opened in 1926. In 1930, the Southern California Gas Company started butane gas service in the community.

Agriculture was hit hard by the economic conditions of the mid-30s. When the price of alfalfa dropped during the Depression (City of Lancaster 2008), many people turned to working in the gold mines around Rosamond and Mojave. Gold mining really began booming in 1934 when the price of gold was raised from $20.67 to $35 per ounce. This, of course, helped support Lancaster businesses. Utility companies, the railroad, and Fernando Milling also provided steady employment.

In 1947, Capt. Charles Yeager flew a Bell XI aircraft from Muroc Air Base (now Edwards Air Force Base) faster than the speed of sound, a major milestone in aviation history. The year 1949 is remembered for its heavy snow (18 to 20 inches in town). Home mail delivery also started that year. In the census of 1950, Lancaster had a population of 3,600 people. The area's first radio station, KAVL, was started that year. By 1970, Lancaster had grown to 40,609 people; it finally incorporated as a city in 1977. One of the most significant factors in Lancaster's development has been the aviation industry. Throughout the twentieth century, private companies and the military have built facilities that added jobs and income.

Historic Archaeological and Historic Site Sensitivity

Sensitivity for historic resources and historic archaeological resources in the Project area is moderate. Early historic uses near the Project area included railroad transportation, ranching and farming, and electrical distribution. Two potential historic sites, the Neenach Substation (c. 1956) and a single family residence (construction date unknown), are within the proposed Project facilities. An architectural reconnaissance will determine the effect of the Project on historic resources and provide additional historic context for the built environment.

3.0 METHODS AND RESULTS

Inventory methods for the Project consisted of archival research, an intensive pedestrian survey, and Native American consultation.

3.1 Archival Research Methods and Results

An expedited record search was conducted on February 27, 2008, and May 22, 2008 of the cultural resources site and Project file collection at the SCCIC of the California Historical Resources Information System (CHRIS) at the Department of Anthropology, California State University, Fullerton. The search focused specifically on the proposed lands and a one mile buffer (SCCIC File 8318.5387 and 8502.5549, included in the confidential Appendix F-3). As part of this search, the California Points of Historical Interest (PHI), California Historical Landmarks (CHL), California Register of Historic Places (CRHP), National Register of Historic Places (NRHP), California Historic Resources Inventory (HRI), and historic maps were reviewed for the Project.

Archival research revealed two previous investigations within portions of the APE. No previously discovered archaeological sites were identified within one mile of the Project site or the transmission line APE. Table 1 is a list of these previous surveys within 1.0 miles of the proposed Project site APE and transmission line corridor APE.

Table 1. Previous Cultural Resources Investigations within 0.50 mile of the Project APE.

Report Number	Report Description	Date	Area Surveyed	Report Findings	Dist. From APE
LA9076	Cultural Resource Assessment Cingular Wireless Facility No, VY- 452-01, City of Lancaster, Los Angeles County, California: LSA Associates, Inc.	2004	< 1 acre	Negative	Within the transmission line corridor (at Neenach Substation)
LA9078	DWO 6036; A.I. No. 5-4868: Tejon 12kV and Petan 12 kV Distribution Lines 2005 SAM Project, Antelope Valley District, Kern and Los Angeles Counties: Letter Report by Compass Rose Archaeological, Inc.	2006	< 1 acre	Negative	Within/adjacent to western Project site boundary

3.2 Native American Consultation Methods

The Native American Heritage Commission (NAHC) was contacted by mail on February 25, 2008, and information regarding traditional cultural properties and sacred places, such as Native American cemeteries, in the Project area was requested. On February 27, 2008, the NAHC responded that there are no known sacred lands in the Project vicinity. The NAHC

also forwarded a list of Native American groups or individuals that may have knowledge regarding traditional cultural properties and sacred places in the Project area. A letter was sent to each of these parties on July 7, 2008 requesting information about such properties (see Appendix F-4). To date, there have been no responses.

In addition to the SCCIC record search, the applicant studied USGS topographic maps and historic aerial maps to determine where unrecorded historic structures and features might be located. The Applicant also contacted the city of Lancaster's General Planning Department and the County of Los Angeles Regional Planning Department (via telephone) requesting information pertaining to historic resources within the vicinity of the Project area.

3.3 Archaeological Survey Methods and Results

A pedestrian field survey for the Project was conducted by Tetra Tech archaeological staff Jenna Farrell, Erica Maier, Arabesque Said, Valerie Parker, and Ben Ludwig from April 19 to 22, 2008 and July 11 and 12, 2008. The Project site area was surveyed utilizing transects spaced no greater than 20 meters (64 feet) apart and the ground surface was inspected for the presence of cultural resources.

3.4 Solar Facility Site

The proposed site is located just north of West Avenue C between 210th Street West and 220th Street West, one mile north of SR 138. The site is currently used as agricultural fields for carrots (Figure 5, Surveyed Area and 440 acre APE). The southwestern area on the property has a single family residence and fenced yard with a donkey. Past land use of the Project site includes agricultural farming since the 1950s (historic maps/aerial photography) throughout the entire site and a dirt motorcycle track (c. 2002-2005: aerial photograph) within the southern region. A large east/west trending dry wash is located along the northern boundary of the Project area.

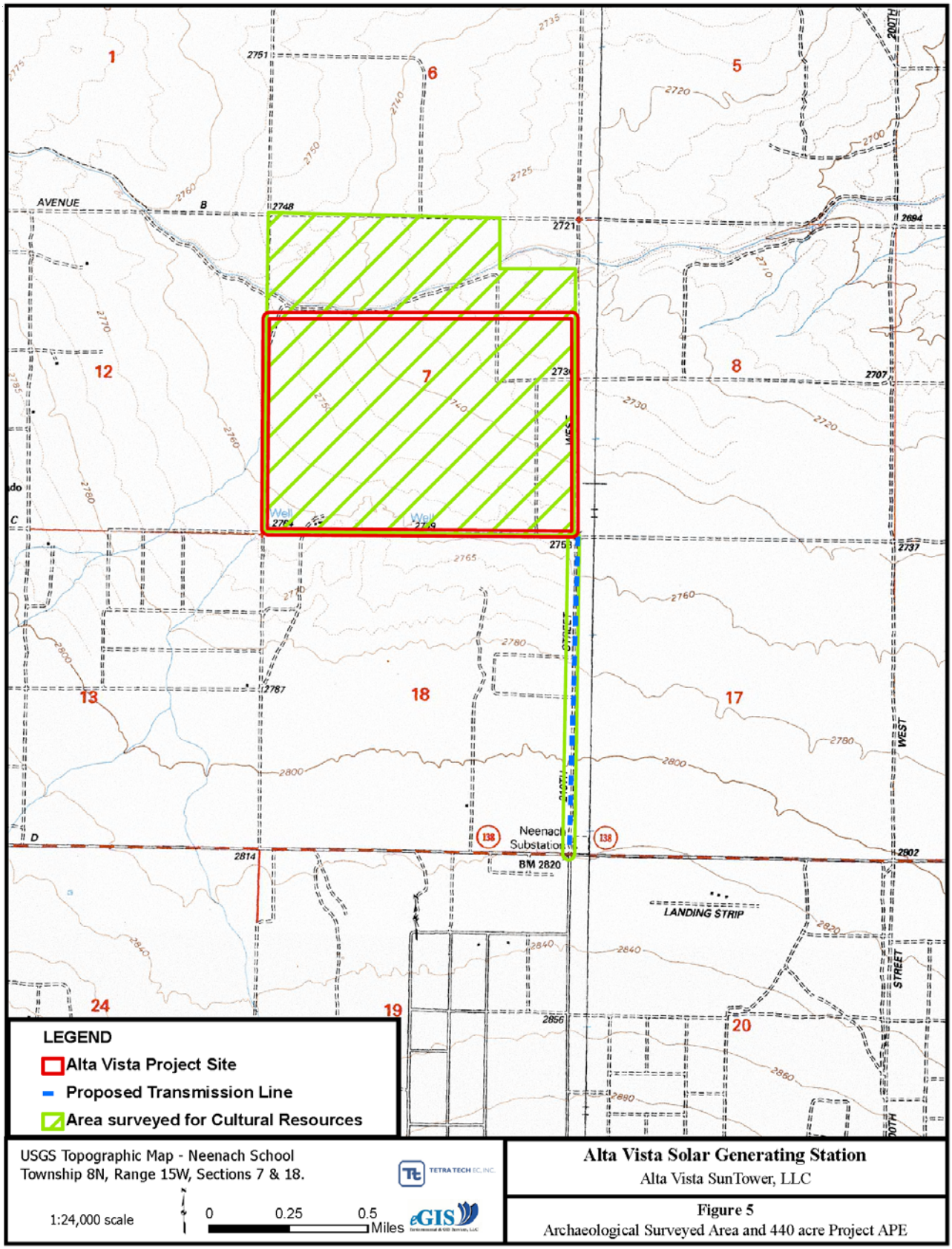
A total of 600 acres of the Applicant-owned land was originally surveyed, but only 440 acres will be used for the Project. The entire 440 acre site APE, including a 200-foot buffer per California Energy Commission (CEC) regulations, was surveyed. Surface visibility was generally excellent (greater than 90 percent) throughout the Project site APE due to recently plowed agricultural fields. A large amount of modern trash was noted within a large dry wash along Avenue C at the western boundary of the Project area. The trash consists of computer remnants, plastic 10-gallon buckets, television, tires, rusted metal, plastic household goods (e.g., silverware container), and foliage from clearing overgrown fields. No cultural resources were identified within the Project site APE.

3.5 Transmission Line Corridor/Access Road

The proposed transmission line corridor is adjacent to an existing dirt road (210th Street West) and extends north for one mile from SR 138 to Avenue C. The entire one mile transmission line/access road corridor was surveyed with 50 feet on either side of the center line (Figure 5). Ground surface visibility was fair to good (around 70 percent) due to Joshua trees, brush, and annual grasses. No cultural resources were observed within the survey corridor.

3.6 Architectural Reconnaissance Methods (Built Environment)

Historic buildings and structures older than 45 years are potentially significant historic resources in the Project area. The historic structure inventory of the Project area and linear corridor is pending. The inventory will include the Project site and linear facilities and adjoining lots to the linear routes (one lot deep), to determine whether potentially significant historic architecture is located within the APE and, if so, whether the Project will significantly affect the structures. Potential historic resources within the Project area include the residence located at the corner of West Avenue C and 220th Street West and the Neenach Substation.


LEGEND
Alta Vista Project Site
Proposed Transmission Line
Area surveyed for Cultural Resources
USGS Topographic Map - Neenach School
Township 8N, Range 15W, Sections 7 & 18.
1:24,000 scale
0
0.25
0.5
Miles
TETRA TECH EC, INC.
eGIS
Alta Vista Solar Generating Station
Alta Vista SunTower, LLC
Figure 5
Archaeological Surveyed Area and 440 acre Project APE
AVENUE
B
C
D
WEST
STREET
200TH
LANDING STRIP
Neenach Substation
BM 2820
138
1
5
6
7
8
12
13
17
18
19
20
24

4.0 CONCLUSION AND RECOMENDATIONS

Tetra Tech performed an archival and literature review and a pedestrian Cultural Resource Inventory of approximately 600 acres of land for the Applicant's proposed Project site located on private land within the city of Lancaster, California. A total of 600 acres of the Applicant-owned land was originally surveyed, but only 440 acres will be used for the Project. The entire 440-acre Project site APE, including a 200-foot buffer per CEC regulations, was surveyed. The purpose of the study is to assist the Applicant in complying with the requirements of CEQA. The purpose of Tetra Tech's investigation is to determine the presence or absence of significant cultural resources within the area of potential effect APE.

The literature review and pedestrian field survey did not result in the identification of any cultural resources within the proposed APE. The implementation of the proposed Project will not have an adverse effect on significant cultural resource sites listed on or eligible for CEQA.

Historic buildings and structures older than 45 years are potentially significant historic resources in the Project area. The historic structure inventory of the Project area and linear corridor is pending. The inventory will include the Project site and linear facilities and adjoining lots to the linear routes (one lot deep), to determine whether potentially significant historic architecture is located within the APE and, if so, whether the Project will significantly affect the structures. Potential historic resources within the Project area include the residence located at the corner of West Avenue C and 220th Street West and the Neenach Substation.

CEQA specifies "a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment" (PRC §21084.1). Further, PRC §5020.1(q) states, "Substantial adverse change means demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired."

No significant "historical resources" were identified during the literature review or survey within the APE of the Project area. As a result, impacts to cultural resources are not anticipated during construction and operation of the Project facility. Unidentified subsurface cultural deposits, however, could be encountered during construction. If the Project were to encounter a buried cultural deposit (e.g., prehistoric or historic artifacts) during construction, the possibility of impacts could arise depending on the significance of the cultural resource.

4.1 Mitigation Measures

It is recommended that the following standard protection measures be implemented and adhered to during Project activities. These measures establish procedures to follow in case previously undiscovered archaeological deposits are encountered below the ground surface.

4.2 Preconstruction Assessment and Construction Training

Prior to construction a Designated Cultural Resource Specialist (DCRS) that meets the Secretary of the Interior's Professional Standards will be identified for the Project. The DCRS and an Archaeological Monitor will visit the Project area before construction begins to become familiar with the site conditions. In addition, the DCRS will prepare a cultural resource training program (incorporated in the Worker Environmental Awareness Program [WEAP]) for all Project construction staff. This training will explain the importance of and legal basis for the protection of significant archaeological resources.

4.3 Avoidance

The proposed facility will be located at the greatest possible distance from any newly identified cultural resources found to be eligible for inclusion on the CRHR and/or the NRHP. As needed, an archaeologist will accompany the Project engineer to the field to demarcate cultural resource boundaries on the ground and to ensure that proposed Project component placement will avoid the potentially significant cultural resources.

4.4 Emergency Discovery

If the construction staff or others identify archaeological resources during construction, they will immediately notify the Archaeological Monitor, DCRS and Site Superintendent. The Archaeological Monitor will halt construction in the immediate vicinity of the find, as necessary. The DCRS will use flagging tape, rope, or some other means as necessary to delineate the area around the find within which construction will halt. This area will include the excavation trench from which the archaeological finds came as well as any piles of dirt or rock spoil from that area. Construction will not take place within the delineated find area until the DCRS, in consultation with the CEC staff, can inspect and evaluate the find.

If human remains are encountered during construction, Project officials are required by law (California Health and Safety Code [CHSC] 7050.5) to contact the county coroner. If the coroner determines that the find is Native American, the coroner is required to contact the NAHC. The NAHC is required (PRC 5097.98) to determine the most likely descendant, notify that person, and request that they inspect the burial and make recommendations for treatment or disposal.

4.5 Site Recording and Evaluation

The DCRS and Archaeological Monitor will follow accepted professional standards in recording any find and will submit the standard Department of Parks and Recreation historic site form (Form DPR 523) and location information to the SCCIC.

If the DCRS determines that the find is not significant, construction will proceed. If the DCRS determines that further information is needed to determine whether the find is significant, the CEC and State Historic Preservation Officer (SHPO) will be notified, and the consultant will prepare a plan and a timetable for evaluating the find in consultation with the CEC and SHPO.

4.6 Mitigation Planning

If the DCRS and the consulting parties (the CEC and SHPO) determine that the find is significant, they will prepare and carry out a mitigation plan in accordance with state and federal guidelines. This plan will emphasize the avoidance, if possible, of significant archaeological resources. If avoidance is not possible, recovery of a sample of the deposit from which the archaeologist can define scientific data to address archaeological research questions will be considered an effective mitigation measure for damage to or destruction of the deposit.

The mitigation program, if necessary, will be carried out as soon as possible to avoid construction delays. Construction will resume at the site as soon as the field data collection phase of any data recovery efforts is completed. The DCRS will verify the completion of field data collection by letter to the Applicant and the CEC Compliance Project Manager (CPM) so that the Applicant and the CPM can authorize construction to resume.

4.7 Curation

The DCRS will arrange for curation of archaeological materials collected during the monitoring and mitigation program at a qualified curation facility; namely a recognized, nonprofit archaeological repository with a permanent curator. The archaeologist shall submit field notes, stratigraphic drawings, and other materials developed as part of the archaeological excavation program to the curation facility along with the archaeological collection.

4.8 Report of Findings

If buried archaeological deposits are found during construction, the archaeologist will prepare a report summarizing the monitoring and archaeological investigatory program implemented to evaluate the find or to recover data from an archaeological site as a mitigation measure. This report will describe the site soils, stratigraphy, analyze artifacts and other materials recovered, and explain the sites' significance. This report will be submitted to the curation facility with the collection.

4.9 Designated Cultural Resources Specialist/Archaeological Monitor Qualifications

The DCRS should meet the minimum qualifications for Principal Investigator on federal projects under the *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation*. The Archaeological Monitor should hold a Bachelor of Arts degree in anthropology with an emphasis in archaeology and have at least one year of experience conducting archaeological field projects, or have five years of experience conducting archaeological field projects. The Archaeological Monitor is qualified to detect archaeological deposits in the field. The DCRS is qualified, in addition to site detection, to evaluate the significance of the deposits, consult with regulatory agencies, and plan site evaluation and mitigation activities.

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1990b Hydration Dating of Coso Obsidian: Problems and Prospects. Paper presented at the 24th meeting of the Society for California Archaeology, Foster City.

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APPENDIX F-1

RESUMES

FRED E. BUDINGER, JR.

Senior Archaeologist Tetra Tech, Inc. – SBO

EDUCATION/SPECIAL TRAINING

M.A., Interdisciplinary Studies (Geoarchaeology), California State University, San Bernardino, 1992
B.A., Anthropology, California State College, San Bernardino, 1972

1992 Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations Training, 24-hour course and 8-hour on-the-job training. Annual recertifications each year: 1993 through 2008.

1992 *Preparing Agreement Documents*. University of Nevada, Reno Cultural Resources Management Program, April 27-28, 1992, Pasadena, California.

1991 *Introduction to Federal Projects and Historic Preservation Law*. U.S. General Services Administration Course, June 19-21, 1991, Los Angeles, California.

REGISTRATIONS/CERTIFICATIONS

Register of Professional Archaeologists (RPA)

YEARS OF EXPERIENCE AS OF JANUARY 2008

Years of Relevant Experience: 34
Years with Tetra Tech: 20

SPECIALTIES

Prehistoric archaeology (survey, excavation, lab analyses), geoarchaeology, Quaternary geology, geomorphology, and geochronology, mapping (especially using GPS), lithic analysis, interpretation

QUALIFICATIONS

Fred E. Budinger, Jr., RPA has a MA (Interdisciplinary Studies in Geoarchaeology) and more than 34 years of experience in archaeology, cultural resources management, and environmental baseline documentation. He is a qualified California Archaeologist who meets and exceeds *The Secretary of the Interior's Standards and Guidelines.* He has been certified by the Register of Professional Archaeologists (RPA). He has demonstrated his ability to carry research and environmental compliance projects to completion. Significant in this regard has been his work concerning cultural resources investigations for Edwards Air Force Base (AFB), Vandenberg AFB, March AFB, Norton AFB, NAWS China Lake, a major wireless telecommunications firm, numerous local market housing developers, and archaeological research at the Calico Early Man Site (especially pertaining to geoarchaeology, geology, geomorphology, and a variety of analytical dating procedures).

Mr. Budinger has an excellent working knowledge of both federal and California state regulations protecting cultural resources, such as the National Historic Preservation Act (NHPA), the National Environmental Policy Act (NEPA), the Archaeological Resources Protection Act (ARPA), 36 CFR 800, the Native American Graves Protection and Repatriation Act (NAGPRA), and Section K of the California Environmental Quality Act (California Health and Safety Code Section 7050.5).

Mr. Budinger has demonstrated competency in basic and specialized archaeological and environmental techniques and processes including: systematic field survey; field assessment, documentation and mapping; field use of Global Positioning System (GPS) receivers; archaeological testing and evaluation; aerial photo interpretation, land use categorization, terrain analysis, cartography; and archaeological and environmental data analysis and synthesis. Mr. Budinger has been at the San Bernardino office of Tetra Tech for 18 years where he is Senior Archaeologist

responsible for preparation of a variety of cultural resources management technical reports and planning documents.

RELEVANT EXPERIENCE

- **Cultural Resources Investigations, Edwards AFB, California.** As Senior Archaeologist, Mr. Budinger has been responsible for a variety of prehistoric and historic cultural resource investigations. Major recent projects have included major academic syntheses of the prehistory of Management Regions 5 and 2 at Edwards AFB, archaeological inventories and evaluations of portions of the Base's northeast and southern boundaries, projectile point typology for Edwards AFB and the western Mojave Desert, a major cultural resources data audit, and preparation of a searchable annotated bibliography. He has also made contributions and served as project director for academic syntheses regarding the evaluation and interpretation of 91 historic homesites (primarily homesteads) and historic mines and mining in the Edwards AFB region.
- **Cultural Resources Investigation in Support of NEPA Assessments for Cellular Telephone Monopoles.** Senior Archaeologist responsible for determining whether the construction and installation of proposed unmanned telecommunications facilities might adversely impact "historic properties" (as defined by Section 106 of the National Historic Preservation Act). Work involved interpretation of cultural resources records check conducted by appropriate Archaeological Information Centers (AICs) of the California Historic Resources Information System (CHRIS), (often) intensive pedestrian cultural resources surveys, report preparation, and consultation with the California State Historic Preservation Officer (SHPO).
- **Cultural Resources Investigation in Support of Small Land Development Projects (Especially for the Construction of Single-Family Residential Dwellings)** Senior Archaeologist responsible for conducting and/or supervising cultural resources surveys (and/or monitoring) of proposed and/or current land disturbing activities involved with the construction of small housing development projects (an similar commercial ventures). Such studies or monitoring efforts were conducted in order to comply with the California Environmental Quality Act (CEQA).
- **Environmental Baseline Survey, Edwards AFB, California.** Environmental Scientist responsible for collecting and synthesizing data pertaining to hazardous waste collection and storage, silver recovery units, medical/biohazardous waste, radioactive material waste, mercury, and radon. Data synthesized n this Environmental Baseline Survey (EBS) will be integrated into the Edwards AFB Comprehensive Plan Geographic Information System (GIS).
- **Cultural Resources Investigations, Edwards AFB, California.** Archaeological Crew Chief assisted with cultural resource investigations of 3,923 acres on Phillips Laboratory, Edwards AFB, California. Responsibilities included supervising and assisting with field survey logistics, site documentation, site location procedures using the Global Positioning System GPS, prehistoric and historic artifact identification, literature searches, and report preparation.
- **Cultural Resources Studies for DOE Programs.** Staff Archaeologist assisted with documentary research, baseline delineations, and impact assessments relating to cultural resources at the following U.S. Department of Energy Nuclear Weapons Complex facilities: Nevada Test Site, Lawrence Livermore National Laboratory, Los Alamos National Laboratory, and the Pantex Plant.
- **Cultural Resources Investigations, Vandenberg AFB, California.** Staff Archaeologist assisted with cultural resources investigations on Burton Mesa, Vandenberg AFB, California. Responsibilities included literature searches and report preparation.
- **Cultural Resources Investigations, Vulcan Mine EIR, County of San Bernardino, California.** Staff Archaeologist assisted with documentary research and field reconnaissance

relating to cultural resources at Vulcan Mine, San Bernardino County, California. Work involved Native American consultation with tribal representative of the Chemehuevi and Mojave tribes.

- **Cultural Resources Research, Broadwell Basin EIR.** Staff Archaeologist assisted with documentary research and report preparation relating to cultural resources investigations conducted in support of an Environmental Impact Statement on a proposed Broadwell Basin Residuals Repository.
- **Cultural Resources Research, Norton AFB, California.** Staff Archaeologist assisted with field reconnaissance and report preparation relating to cultural resources at Norton AFB, California.
- **Cultural Resources Survey, March AFB, California.** Staff Archaeologist conducted a cultural resources survey and prepared a technical report for portions of March AFB, California.
- **Cultural Resources Investigations for EIS, Los Angeles AFB, California.** Staff Archaeologist assisted with baseline delineations and impact assessments for an Environmental Impact Statement prepared for the Proposed Closure of Los Angeles AFB, California, and Relocation of Space System Division.
- **Cultural Resources Survey, Railroad Corridor, Roundup, Montana** - Staff Archaeologist assisted with a cultural resource survey for a 38-mile railroad corridor in the vicinity of Roundup, Montana. Responsibilities included assisting with site documentation, artifact identification, photography, and report preparation.
- **Cultural Resources Monitoring/Mitigation for Peacekeeper Rail Garrison/Small ICBM Flight Test Program, Vandenberg AFB, California.** Archaeological Field Technician and Laboratory Technician conducted cultural resources monitoring and site mitigation for the construction of missile test facilities related to Peacekeeper Rail Garrison and Small ICBM Flight Test Program at Vandenberg AFB, California. Participated in excavation and site documentation of prehistoric sites located on the base. Monitored construction activities for cultural resources and worked closely with biological and Native American Chumash monitors. Analyzed the lithic artifact assemblages excavated from 19 prehistoric archaeological sites. As Staff Archaeologist, was the Principal author of the technical report regarding the cultural resources investigations conducted in support of the Peacekeeper Rail Garrison program at Vandenberg AFB.
- **Cultural Resources Investigations, Calico Early Man Site, Yermo, California.** Site Curator and Field Archaeologist for the Calico Early Man Site, Yermo, California, for 12.5 years. Responsible for onsite management of the project including supervision of archaeological surveys and excavation and geological investigations. Published ten professional articles on the Calico site and served as the onsite interpreter and liaison with the public. Prepared a National Register of Historic Places nomination to expand the size of the already-listed Calico Archaeological District.
- **Cultural Resources Investigations, Cajon Pass, California.** Field Archaeologist for the cultural resources investigations of two sites in the Cajon Pass National Register District 76-514, San Bernardino County, California.

PROFESSIONAL ORGANIZATIONS/ASSOCIATIONS

Register of Professional Archaeologists (RPA)
Society for American Archaeology (SAA)
Society for California Archaeology (SCA)

PUBLICATIONS AND PROJECTS

Calendar Year 2007

Budinger, Fred E., Jr.

2007 Senior Archaeologist and author of *Class I Literature Review and Research Design and Work Plan for Class II Cultural Resources Inventory of a Right-of-Way for Proposed Project Genesis Solar Facilities in the Vicinity of Ford Dry Lake, Riverside County, California*. Prepared for Bureau of Land Management, Palm Springs – South Coast Field Office, North Palm Springs, California 92258-1260.

2007 Senior Archaeologist and author of *A Class III Cultural Resources Inventory for the Proposed Project Genesis McCoy Wash Irradiance Meter and Well Sites, Riverside County, California*. Prepared for Bureau of Land Management, Palm Springs – South Coast Field Office, North Palm Springs, California 92258-1260.

2007 Senior Archaeologist and author of *A Class III Cultural Resources Inventory for the Proposed Project Genesis Ford Dry Lake Irradiance Meter and Well Sites, Riverside County, California*. Prepared for Bureau of Land Management, Palm Springs – South Coast Field Office, North Palm Springs, California 92258-1260.

2007 Archaeological monitor for eight days of cultural and paleontological resources monitoring of gross excavation for the construction of seven single-family residences for the Acacia Avenue Project, Hemet California. Monitoring conducted for Keith Suchow Architect, Redlands, California.

2007 Archaeologist and author of *An Archaeological Assessment of the Proposed Verizon Wireless Yuba Unmanned Cellular Telecommunications Site, Hesperia, San Bernardino County, California.* Prepared by Tetra Tech, Inc. for Verizon Wireless, Inc., Real Estate and Construction, Irvine California 92618.

2007 Archaeologist and author of *An Archaeological Assessment of the Proposed Verizon Wireless Chestnut Cellular Telecommunication Site Hesperia, San Bernardino County, California.* Prepared by Tetra Tech, Inc. for Verizon Wireless, Inc., Real Estate and Construction, Irvine California 92618.

2007 Archaeologist and author of *Archaeological Research Survey of Approximately 1.9-Acres for the Verizon Sunrise Unmanned Telecommunications Site Located West of Calexico, Imperial County, California.* Prepared for Verizon Wireless, Inc., Real Estate and Construction, Irvine, California 92618.

2007 Archaeologist and author of *Archaeological Survey of Approximately 10 Acres (APN 486-280-001) Located southeast of the Intersection of Alessandro Boulevard and Lassalle Street, Moreno Valley, Riverside County, California 92555*. Prepared for Winchester Associates, Inc., Moreno Valley, California.

2007 Archaeologist and author of *Archaeological Survey Report for the Southern California Edison Company; DSP Andrew Dunlap Residential Extension Project, 1030 Shangrila Road, Joshua Tree, San Bernardino County, California (WO# 6184-1407 P-1261).* Prepared for Southern California Edison Company, Rosemead, California.

2007 Archaeologist and author of *Archaeological Survey Report for the Southern California Edison Company; O&M Lucerne Valley Rule 20A Underground Conversion Project (WO# 6473-6238 6-6-6200).* Prepared for Southern California Edison Company, Rosemead, California.

2007 Archaeologist and author of Archaeological Survey Report for the Southern California Edison Company; DSP – Pawnee 12 kV Overhead Rebuild and Reconnector Project Portions on Private Land) (WO# 6177-5421 6-5014). Prepared for Southern California Edison Company, Rosemead, California

2007 Archaeologist and author of *Archaeological Survey Report for the Southern California Edison Company; DSP – Pawnee 12 kV Overhead Rebuild and Reconnector Project Portions on Bureau of Land Management Land) (WO# 6177-5421 6-5014).* Prepared for Southern California Edison Company, Rosemead, California

2007 Archaeologist and author of *Archaeological Survey of Approximately 50-Acres (APNs 3064-441-01, -02, and -03) for the Proposed Main Street Hesperia Project to be Located Northwest of the Intersection of Main Street and Mesa Linda Street in the City of Hesperia, San Bernardino County, California 92345*. Prepared for New Desert Communities, Irvine, California 92612.

2007 Archaeologist and author of *An Archaeological Survey of 10-Acres (APN 3064-601-01) for the Proposed Holiday Inn Hesperia Project to be Located Southeast of the Intersection of Main Street and Mesa Linda Street in the City of Hesperia, San Bernardino County, California 92345*. Prepared for Aviano Group, Inc., Victorville, California.

2007 Senior Archaeologist for Cultural Resources Monitoring at Dillon Wind Farm, Unincorporated Territory Southwest of the City of Desert Hot Springs, Riverside County, California.

2007 Archaeologist/Paleontologist and author of *An Archaeological and Paleontological Resources Survey of Approximately 10-Acres Southeast of Mission Boulevard and Camino Real for the Proposed Jurupa Valley Aquatic Center, Community of Glen Avon, Riverside County, California*. Prepared for the Redevelopment Agency of the County of Riverside.

2007 Archaeologist and author of *An Archaeological Survey of Approximately One-Acre for a Proposed AutoZone Store to be Located near the Southeast Corner of San Jacinto Avenue and Esplanade Avenue in the City of San Jacinto, Riverside County, California 92582*. Prepared for AutoZone, Inc., Memphis, Tennessee 38103.

2007 Principal Author and Project Manager for *Archaeological Inventory and Evaluation for Selected Areas (Northeast Boundary) of Edwards Air Force Base, California.* Under preparation for U.S. Army Corps of Engineers Contract, Sacramento District under contract DACA-05-01-D-005.

2007 Designated Cultural and Paleontological Resources Specialist for the Inland Empire Energy Center (IEEC) in Romoland, California. Monitoring of ground disturbing activities in the main IEEC site area Services provided for the California Energy Commission, Sacramento, California.

Calendar Year 2006

Budinger, Fred E., Jr.

2006 Archaeologist and author of *A Prehistoric Archaeological Resources Survey of Approximately 14 Acres For the Expansion and Retrofit of The Port of Entry At Calexico, County Of Imperial, California*. Prepared by Tetra Tech, Inc. for Tetra Tech NUS, Albuquerque, New Mexico.

2006 Archaeologist and author of *An Archaeological Survey of 4.5 Acres (APNs 478-230-014 & -018 and 478-120-017, 478-142-029, and 478-240-002) For The Tentative Tract 33222 Moreno Valley Project Located Near The Intersection of Alessandro Boulevard and Merwin Street, Moreno Valley, Riverside County, California*. Prepared by Tetra Tech, Inc. for Winchester Associates, Inc., Moreno Valley, California 92553.

2006 Archaeologist and author of *An Archaeological Survey of Approximately 20 Acres (APN 477-180-012 and -013) for the Tentative Tract 34397 Moreno Valley Project Located Southeast Of Cottonwood Avenue and Nason Street, Moreno Valley, Riverside County, California 92555*. Prepared by Tetra Tech, Inc. for Winchester Associates, Inc., Moreno Valley, California 92553.

2006 Senior Archaeologist and author of *An Archaeological Resources Survey of Approximately 2.23 Square Miles For The Dillon Wind Farm Project, Unincorporated Territory Southwest Of The City Of Desert Hot Springs, County Of Riverside, California*. Prepared by Tetra Tech EC for Dillon Wind Farm LLC.

2006 Archaeologist and author of *Archaeological Survey of 2.8 Acres for the Silverhawk-Innovation Court Development, Murrieta, Riverside County, California*. Prepared by Tetra Tech, Inc. for Mr. Scott Goodman, Silverhawk Industrial LLC, Huntington Beach, California 92647.

2006 Archaeologist and author of *An Archaeological Survey of The Proposed Jurupa Truck Facility, Rubidoux, Riverside County, California*, Prepared by Tetra Tech, Inc. for Mr. Sylvester (Cy) Zermeno, Land Development Engineering, Colton, California 92324.

2006 Archaeologist and author of *An Archaeological Assessment of the Proposed Verizon Wireless Lockwood Unmanned Cellular Telecommunications Site, Victorville, San Bernardino County, California*. Prepared by Tetra Tech, Inc. for Verizon Wireless, Inc., Real Estate and Construction, Irvine California 92618.

2006 Designated Cultural Resources Specialist for the Inland Empire Energy Center (IEEC) in Romoland, California. Services provided for the California Energy Commission, Sacramento, California.

Calendar Year 2005

Budinger, Fred E., Jr.

2005 Principal author of *A Class III Intensive Archaeological Field Inventory of 120 Acres for the South Salton Sea Shallow Water Habitat Project, Imperial County, California.* Prepared for the U.S. Bureau of Reclamation, Boulder City, Nevada.

2005 Principal author of *Archaeological and Paleontological Resources Monitoring Report Regarding Ground-Disturbing Activities in the 67.3-Acre Country Glen II Project Site, Menifee, Riverside County, California.* Prepared for Forecast Homes, Temecula. California 92591.

2005 Principal author of *Archaeological Survey of 1.5 Acres (APN 0135-011-16) for the Community Health Services Facility to be Located at 655 North D Street, City of San Bernardino, County of San Bernardino, California 92401*. Prepared for Inland Behavioral and Health Services, Inc., San Bernardino, California 92405.

2005 Designated Cultural Resources Specialist for the Inland Empire Energy Center (IEEC) in Romoland, California. Services provided for the California Energy Commission, Sacramento, California.

2005 Principal author of *An Archaeological Resources Survey of Approximately 54.5 Acres for the Desert Hot Springs Project. Unincorporated Territory North of the City of Desert Hot Springs, County of Riverside, California.* Prepared for Phoenix Design Group LLC, Scottsdale, Arizona 85258.

2005 Principal author of *Archaeological Resources Survey and Monitoring of Eight Boreholes in Support of the Shank Road Pilot Wetland Project east of Brawley, California.* Prepared for the Salton Sea Authority, La Quinta, California and the U.S. Bureau of Reclamation, Lower Colorado Regional Office, Boulder City, Nevada 89006.

2005 Principal author of *Revision II of A Class III Intensive Archaeological Field Inventory of Approximately 60 Acres for the Proposed New School at Big River Project Located Adjacent to the Colorado Indian Tribes Reservation, Big River, San Bernardino County, California*. Prepared for C3 Solutions, Evergreen, Colorado 80439.

2005 Principal author of an *Archaeological Resources Monitoring of Approximately 80 Acres for the Coachella 293 Project, City of Coachella, County of Riverside, California*. Prepared for Forecast Homes, Ontario, California 91764.

2005 Principal author of *An Archaeological Resources Survey of Approximately 80 Acres for the Coachella 293 Project, City of Coachella, County of Riverside, California.* Prepared for Forecast Homes, Ontario, California 91764.

Calendar Year 2004

Budinger, Fred E., Jr.

2004 Principal author of *An Archaeological and Paleontological Resources Survey of the 67.3-Acre Country Glen II Project Site, Menifee, Riverside County, California.* Prepared for Forecast Homes, Temecula. California 92591

2004 Principal author of *An Archaeological Assessment of the Proposed Verizon Wireless Forest Falls Unmanned Cellular Telecommunications Site to be Located North of Alder Drive (APN: 0323-422-30-0-000), Forest Falls, San Bernardino County, California 92364*. Prepared for Verizon Wireless, Inc., Real Estate and Construction, Irvine, California 92618.

2004 Principal author of *An Archaeological Resources Survey of Approximately 8.6 Acres Northeast of the Intersection of Redlands Boulevard and Nevada Street (APNs 0292-063-12, -13, -17, and -41) in the City of Redlands, County of San Bernardino, California 92373*. Prepared for Capital Associates, LLC, Whittier, California 90602

2004 Principal author of *An Archaeological Resources Survey of Approximately 6 Acres for the Mkijowa Commerce Center, LLC Project Located at Iowa Street and Citrus Avenue in the City of Redlands, San Bernardino County, California.* Prepared for Mr. Michael B. Mueller, Capital Associates. LLC, Whittier, California 90602.

2004 Principal author of *An Archaeological Resources Survey of Approximately 13 Acres Located at Choiceana Avenue near Lemon Street in the City of Hesperia, San Bernardino County, California.* Prepared for Ms. Tamra Renfrow, Hesperia, California 92345.

2004 Principal Author and Project Manager for *Testing, Evaluation, and Synthesis for Management Region 2, Edwards Air Force Base.* Prepared for the U.S. Army Corps of Engineers Contract, Sacramento District under contract DACA-05-01-D-005.

2004 Principal Author and Project Manager for *Analysis and Typology Creation for Projectile Points, Edwards Air Force Base, California*. Prepared for the U.S. Army Corps of Engineers Contract, Sacramento District under contract DACA-05-01-D-005.

2004 Contributing Author and Project Manager for *Evaluation of Desert Homesites, Edwards Air Force Base, California*. Prepared for the U.S. Army Corps of Engineers Contract, Sacramento District under contract DACA-05-01-D-005.

2004 Project Manager for *Evaluation of Historic Refuse Deposits, Edwards AFB, California*. Prepared for the U.S. Army Corps of Engineers Contract, Sacramento District under contract DACA-05-01-D-005.

2004 Project Manager for *Building Inventory and Evaluation, Edwards Air Force Base, California.* Prepared for the U.S. Army Corps of Engineers Contract, Sacramento District under contract DACA-05-01-D-005.

2004 Project Manager for *Archaeological Evaluation of Mines and Mining-Related Sites, Edwards Air Force Base, California.* Prepared for U.S. Army Corps of Engineers Contract, Sacramento District under contract DACA-05-01-D-005.

2004 Principal author and Project Manager for *Archaeological Evaluation of the Southern Boundary, Edwards Air Force Base, California*. Prepared for U.S. Army Corps of Engineers Contract, Sacramento District under contract DACA-05-01-D-005.

2004 Principal author of *An Archaeological Resources Survey of Approximately 20 Acres for the Seneca Road Project, City of Victorville, County of San Bernardino, California*. Prepared for Investment Concepts, Orange, California.

JENNA FARRELL

Ms. Farrell has 8 years experience in cultural resource management including prehistoric and historic archaeology, traditional cultural properties, and historic architecture and structures. Among this experience are three years in a supervisory capacity in support of regulatory compliance programs for energy, transportation, mineral and water resources development, commercial, public utility, and state and federal agency clients. Ms. Farrell has gained this experience with the USDA Forest Service (USFS), the Bureau of Land Management (BLM), and private firms. Ms. Farrell has experience with the National Historic Preservation Act, the National Environmental Policy Act, California Environmental Quality Act, the Native American Graves and Repatriation Act, the Archaeological Resources Protection Act, American Religious Freedom Act, and with the NHPA Section 106 consultation Process. She has consultation experience with Native American Tribes, the Native American Heritage Commission, Bureau of Land Management, Clients, and County Cultural Resource Specialists. She has conducted cultural resource management analyses on a number of proposed development projects in California, Nevada, Utah, Oregon, Washington, Texas, and abroad in South America (Peru).

EDUCATION

BA, Anthropology/Archaeology; Minor, Native American Studies Humboldt State University, Arcata, CA, 1997

TRAINING

Section 106: An Introduction, National Preservation Institute, 2006
CEQA: An Introduction 2006
Technical Writing Seminar, Leadership Development Communications, 2006
Project Management 201, Tetra Tech, EC 2007
Wilderness First Responder 10/2001
Basic First Aid/CPR 10/2007
Integrating Cultural Resources in NEPA Compliance, National Preservation Institute, 12/2001
Consultation with Indian Tribes on Cultural Resources Issues, National Preservation Institute 9/2003

RECENT TTEC PROJECT EXPERIENCE

Blythe Energy Project Transmission Line, Riverside County, CA. Deputy Project Manger/Cultural Resource Specialist. . The purposes of the study was to assist Blythe Energy, LLC in complying with the requirements of the California Environmental Quality Act (CEQA) and assist with compliance under the Application for Certification, California Energy Commission's (CEC) final staff assessment (CEC), Docket # 99-*AFC-8c) for a 67.4 mile, 230kV overhead transmission line. Duties include: developing, writing, and assisting disciplines with several treatment, mitigation and monitoring plans (e.g. lighting mitigation, surface treatment, paleontolgical and cultural resources mitigation and monitoring, etc.). Coordinating meetings, schedules, document production, and other project related task with Client, Contractors, CEC Cultural Resources staff, Bureau of Land Management Cultural Staff, and County of Riverside.

Dillon Wind LLC, Palm Spings, CA. Field Director/Author. Duties: preformed a literature review and a Class III cultural resource survey of approximately 1,500 acres of vacant land for Dillon Wind LLC's (LLC) proposed 45 megawatt (MW) wind energy conversion system (WECS) project, located near the San Gorgonio Pass, north of the City of Palm Springs and west of Desert Hot Springs, Riverside County, CA (within the Cochella Valley of the Colorado Desert). The purpose of the study was to assist LLC in complying with the requirements of the California Environmental Quality Act (CEQA). Other duties included, conducted Native American Consultation and coordination with Native American Cultural Construction Monitors, prepared Final Cultural Report for submittal to the

County of Riverside, CA, and prepared the Cultural Resources Mitigation and Monitoring Plan, coordinated and supervised archaeological construction monitors, coordinated with construction staff and the County of Riverside and resolved any cultural issues efficiently and in a timely manner

Edwards Airforce Base Evaluation of Archeological Sites, Edwards AFB, CA. 11/2005-present. Served as an Assistant Field Director and Collections Manager. For Phase I and II EAFB northern boundary survey; in the Mojave Desert, within Los Angeles and Kern counties. Duties included field supervision of crew, prefield research, implementation of survey techniques (conducted archaeological and architectural field inventories for prehistoric and historic archaeological properties and historic buildings and structures), archaeological site relocation and documentation, new site recording, and site testing of 29 prehistoric and historic sites. Additional duties include standard excavation practices, lithic characterization, daily collection of artifacts and quality control of excavation documentation, artifact and sample preparation, and entering collection analysis into the EAFB database management system (CRGIS).

enXco, San Bernardino County, CA. Field Director/Author. 2007. Duties: preformed a literature review and a Class III Cultural Resources Survey on BLM land (Barstow field office) for two Meteorological Tower sites and associated access routes. The purpose of this study was to assist enXco in complying with the requirements of NEPA. Prepared Environmental Assessment and the Class III Survey Cultural Resources Management Report.

Bonneville Power Administration, Ferry and Stevens County, Washington. Project Manager/Field Director/Author. Duties: preformed a literature review and a Class III cultural resource survey of approximately 24.14 (210 power pole locations) and prepared the Section 106 Report. Other duties included coordination with client, land owners, recordation of archaeological sites and National Register of Historic Places evaluations, and final report preparation.

Roseville Energy Park, City of Roseville, CA. Archaeologist/Author. The purposes of the study was to assist Roseville Energy in complying with the requirements of the California Environmental Quality Act (CEQA) and assist with the Application for Certification under the California Energy Commission's (CEC) permitting process for a natural gas-fired power plant, and associated pipelines, Docket # 03-AFC-1. . Duties included: conducted extensive record searches (at the California Historical Resources Information Center, State Library, and City Offices) literature review, and historic map reviews, consulted with city and county Historic Resource personnel, the Native American Heritage Commission, the Native American tribes, and the State Historic Preservation Office, preparation of cultural resource report, replied to response, comments, and any data request requirements, consulted with interested parties regarding cultural resources, and conducted archaeological and architectural field inventories for prehistoric and historic archaeological properties and historic buildings and structures.

Gilroy City LM6000 Phase I and Phase ll Projects, Calpine Corporation, Gilroy, CA. Archaeologist/Author. The purposes of the study was to assist Calpine in complying with the requirements of the California Environmental Quality Act (CEQA) and assist with the Application for Certification under the California Energy Commission's (CEC) permitting process for a natural gas-fired power plant, and associated pipelines, Docket # 01-EB-8. Duties included planning and conducting cultural resources literature and background searches and archaeological and architectural field inventories for prehistoric and historic archaeological properties and historic buildings and structures, and consultation with the Native American Heritage Commission and Native American individuals and groups. Other duties included developing an archaeological resource treatment plan, monitoring of construction activities, and conducting archaeological excavations. **Phase II:** Duties included conducting literature searches, background information, survey, analyzed data, and

preparation of prehistoric and historic context statements to be included in CEQA compliant document for the reconductoring of a 22 mile, 115kV transmission line.

Catamount Energy, Clark County, NV. Field Director/Author. 2007. Duties: preformed a literature review and a Class III Cultural Resources Survey on BLM land (Barstow field office) for 12 Meteorological Tower sites and associated access routes. The purpose of this study was to assist Catamount and BLM in complying with the requirements of NEPA. Prepared Environmental Assessment and the Class III Survey Cultural Resources Management Report, conducted Native American Consultation, BLM consultation.

enXco, San Bernardino County, CA. Field Director/Author. 2007. Duties: preformed a literature review and a Class III Cultural Resources Survey on BLM land (Barstow field office) for two Meteorological Tower sites and associated access routes. The purpose of this study was to assist enXco in complying with the requirements of NEPA. Prepared Environmental Assessment and the Class III Survey Cultural Resources Management Report.

Boulevard Energy, Kern County, CA. Field Director/Author**. 2007.** Duties: preformed a literature review and a Class III cultural resource survey (BLM Ridgecrest Field office) for Boulevard Associates, LLC's (Boulevard) proposed four meteorological (MET) tower locations near the town of Tehachapi, in Kern County, California. The purpose of this study was to Boulevard in complying with the requirements of NEPA. Prepared the Class III Survey Cultural Resources Management Report.

Sky River MET Towers, LLC, Tehachapi, CA. 2006**.** Archaeological Field Lead. Duties: obtained appropriate permits from BLM (State and Ridgecrest, CA offices), preformed a literature review, survey, and reporting for over 4 linear miles and one acre of land for the Sky River project's proposed MET tower locations and access route in the Southern Sierra Nevada, CA (15 miles northeast of Tehachapi, CA). Prepared Final Cultural Resource Report for submittal to the BLM and client.

Edwards Air Force Base Evaluation of Archeological Sites, Edwards AFB, CA. 11/2005-present. Served as an Assistant Field Director and Collections Manager. For Phase I and II EAFB northern boundary survey; in the Mojave Desert, within Los Angeles and Kern counties. Duties included field supervision of crew, prefield research, implementation of survey techniques (conducted archaeological and architectural field inventories for prehistoric and historic archaeological properties and historic buildings and structures), archaeological site relocation and documentation, new site recording, and site testing of 29 prehistoric and historic sites. Additional duties include standard excavation practices, lithic characterization, daily collection of artifacts and quality control of excavation documentation, artifact and sample preparation, and entering collection analysis into the EAFB database management system (CRGIS).

Laguna Sur Sanitary Easement, South Coast Water District, Orange Count, California. 4/2006. Served as Cultural Resource Specialist for waterline replacement projects in South Laguna, California. Duties included conducting cultural resource literature searches, background research, pedestrian surface survey, historic architectural survey, and preparation of prehistoric and historic context statements to be included in CEQA compliant Initial Study documentation.

SEMPRA, El Centro, CA 2/2006. Archaeological Field Lead. Duties included performing an archaeological survey on BLM lands in the Colorado Desert, Imperial County, just west of Brawly, CA, to assist with mitigation measure for a controlled burn. Duties included a pedestrian survey for a linear access road and laydown areas and reporting.

UPC Management LLC, CA 9/2005. Archaeological Field Lead. Duties included obtaining a BLM Cultural Use Permit, performing a literature review, Class III cultural resource survey, and cultural resources report for UPC Wind Management LLC's (UPC) proposed eight meteorological (MET) tower locations in the Mojave desert near Apple Valley in San Bernardino County, California and in the Colorado Desert, Imperial County, EL Centro, CA; to assist the UPC in complying with the requirements of the National Environmental Policy Act (NEPA) and to assist the USDI Bureau of Land Management (BLM) in complying with the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations (36 CFR 800). The purpose of this investigation was to determine the presence or absence of significant cultural resources within the area of potential effect (APE).

Calpine Corporation, Inland Empire Energy Center: Hemet, California. 2005-present. Periodically serve as a senior archaeological technician and cultural resources monitor during Phase I construction of the Inland Empire energy center, a natural gas-fired peaking power production facility. Assist with planning and conducting cultural resource literature searches and field inventories for prehistoric and historic archaeological properties and historic buildings and structures

Florida Power and Light, Horse Hollow Wind Energy Project, Taylor County, Texas. 4/2004 Served as an Assistant Field Director for an archaeological survey of 150+ wind turbine sites, ancillary facilities, and access roads in west-central Texas. Duties included survey, site documentation, photographic documentation, supervision of field crew, and the advanced Global Positioning System mapping of sites, features, and artifacts within an NRHP eligible, high density prehistoric lithic procurement and production district.

Eurus Energy America Corporation, Combine Hills Project, Phase II, OR. 1/2005. Served as an assistant Field Director for a 484 acre development corridors for constructing interconnections and access corridors for the Combine Hills Turbine Ranch Phase II project (wind-power project). Duties included a heritage resources inventory of the 484-acre development corridors, recordation and GPS mapping of archaeological sites, photographic documentation, and incorporating final survey results and documentation into and existing report.

Sound Energy Solutions, Long Beach LNG C2 Pipeline Project, CA. 1/2005. Served as an Archaeological Lead. For a C2 pipeline route that extended from the proposed Long Beach Liquid Natural Gas import terminal to the ConocoPhillips Los Angeles Refinery, Carson Plant in southern California to satisfy regulator (Federal Energy Regulatory Commission) compliance. Conducted archaeological and architectural field inventories for prehistoric and historic archaeological properties and historic buildings and structures. Duties also included Native American Consultation, photographic documentation, review of literature research, and heritage resource inventory of the project area, and reporting for Section 106 compliance.

Florida Power and Light, Blythe Energy Transmission Line Amendment, Blythe, CA. 7/2004 Archaeologist/Author. Served as an archaeologist for a 60-mile 230lV and a 7-mile161kV transmission line installation project for the Blythe Energy project in southern, CA. Duties included preparation of the cultural resource section for the application for certification amendment under the California Energy Commission's permitting process. Work involved close coordination and communication with upper level client project managers, agency representatives, sub-contractors, and project regulators.

Pacific Legacy, Old Sacramento County Hospital Cemetery, Sacramento, CA. 5/2004. Archaeological Technician, 5/2004. Served as an archaeological technician for a Phase III burial excavation and relocation of the old Sacramento County Hospital Cemetery (c.1880s-1920s). Duties

included identifying features, implementation of burial excavation methods, exhuming human remains, data collection and excavation documentation.

Edwards Airforce Base Evaluation of Archeological Sites, Edwards AFB, CA. 12/2003-2004. Assistant Field Director/Collections Manager. Served as an Assistant Field Director for Phase I EAFB southern boundary survey. Duties included field supervision of crew, implementation of survey techniques, site relocation and documentation, and new site recording, and collection of artifacts. Served as Collection Manager/Crew Chief for Phase II excavation of 15 prehistoric sites. Conducted archaeological and architectural field inventories for prehistoric and historic archaeological properties and historic buildings and structures. Duties include standard excavation practices, lithic characterization, daily collection of artifacts and excavation documentation, artifact and sample preparation. Entered collection analysis into the EAFB database management system (CRGIS).

Buena Vista Project, Chillon Valley, Peru. 2003. Crew Chief for the University of Missouri summer archaeological field school in northern Peru, Supervised student crew excavation of a Pre-ceramic and Initial period archaeological site. Assisted students with archaeological field methods including, excavation, mapping, unit documentation and photography, artifact identification and collection, soil samples, and unit profiles. Lab work consisted of lithic and ceramic analyses and a study of human remains from specimens collected from the site.

Calpine Corporation, Russell City Energy Center (01-AFC-07). Archaeologist/Author. 2001. Author of the cultural resources section for the environmental assessment for the reconductoring of the transmission line. Conducted a cultural resource literature search and prepared the cultural resources inventory and historical background information.

Humboldt-Toiyabe National Forest, Clear Creek/Kings Canyon Landscape Analysis, CA. 11/2003-2/2004. Archaeologist/Author. Served as a technical author for the Cultural Resource section of a detailed, large-scale watershed/landscape analysis in western Nevada. This multi-task assignment included significant archival research to determine the extent and adequacy of existing cultural resources (sites, landscapes, etc.), including their National Register of Historic Places (NRHP) status. Other tasks included determining the desired conditions for cultural resource management, analysis and synthesis of collected data, preparing prehistoric and historic background contexts for the affected area, and the development of recommendations to reconcile current and desired conditions for the analysis area.

Shasta Trinity National Forest, Hidden Valley Watershed Analysis Project, CA. 2002. Archaeologist/Author. Served as a technical author for the Cultural Resource section of a detailed, large-scale watershed/landscape analysis in northern California. This multi-task assignment included significant archival research to determine the extent and adequacy of existing cultural resources (sites, landscapes, etc.), including their National Register of Historic Places (NRHP) status. Other tasks included determining the desired conditions for cultural resource management, analysis and synthesis of collected data, preparing prehistoric and historic background contexts for the affected area, and the development of recommendations to reconcile current and desired conditions for the analysis area.

Plumas National Forest, Upper Slate DFPZ Project. 2002. Senior Archaeological Technician. 2002. Conducted archaeological surveys, recorded historic and prehistoric archaeological sites, and site form preparation.

Calpine Corporation, Eureka Project Critical Issues Review, Humboldt Co., CA. 2002. Author/Archeologist. Duties included conducting literature searches, background information,

analyzed data, and preparation of prehistoric and historic context statements to be included in CEQA compliant Initial Study document.

Calpine Corporation, Pajaro Energy Center, Monterey Co., CA. 10/2001. Archaeologist. Duties included conducting literature searches, background information, analyzed data, and preparation of prehistoric and historic context statements to be included in CEQA compliant Initial Study document.

Calpine Corporation, Hesperia Energy Center Critical Issues Review, San Bernadino Co., CA. 10/2001. Author/Archeologist. 10/2001. Duties included conducting literature searches, background information, analyzed data, and preparation of prehistoric and historic context statements to be included in CEQA compliant Initial Study document.

Calpine Corporation, Antioch Energy Center Critical Issues Review, Antioch, CA. Author/Archeologist. Duties included conducting literature searches, background information, analyzed data, and preparation of prehistoric and historic context statements to be included in CEQA compliant Initial Study document.

Calpine Corporation, Milpitas Energy Center Critical Issues Review, CA. Author/Archeologist. 1/2002. Duties included conducting literature searches, background information, analyzed data, and preparation of prehistoric and historic context statements to be included in CEQA compliant Initial Study document.

Calpine Corporation, Southport Peaking Power Project Critical Issues Review, CA. Author/Archaeologist. 4/2001-6/2001. Duties included conducting literature searches, background information, analyzed data, and preparation of prehistoric and historic context statements to be included in CEQA compliant Initial Study document.

Alturas Power Project Critical Issues Analysis, Alturas, CA. Author/Archeologist. 2002. Duties included conducting literature searches, background information, analyzed data, and preparation of prehistoric and historic context statements to be included in CEQA compliant Initial Study document.

Tesla Power Project, Midway Power, LLC, FPL Energy. Archaeologist. 4/2002-2003. Duties included conducting literature searches, background information, analyzed data, survey, site recordation, responding to data request, and preparation of prehistoric and historic context statements to be included in CEQA compliant document.

King City Project, Calpine Corporation, King City, CA. 2001-2002. Archaeologist/Author. Author of the Cultural Resources Section for an Application for Certification under the CEC's 21-day Process for LM6000 natural gas-fired turbines at the existing power plant facilities, for submittal to the California Energy Commission. Planned and conducted cultural resources field inventory and archaeological literature search of the proposed power plant project site in Santa Clara and Monterey counties. Duties also included consultation with the Native American Heritage Commission and Native American tribes, and the preparation of *Data Recovery Investigations of the Buried Hearth KC-01-01* archaeological report.

Rio Linda/Elverta Power Project, Florida Power and Light, Rio Linda, CA. 10/2001. Archaeologist. 10/2001. Conducted archaeological and architectural surveys within project area and along linear pipelines, recorded historic structures, and prepared site form documentation.

Inland Empire Power Project, Calpine Corporation, Romoland, CA. 8/2001. Senior Archaeological Technician. 8/2001. Conducted archaeological surveys and site recordation of the proposed project area, and pipeline linears.

Edwards Air Force Base: Management Region 5, Palmdale, CA. 2001. Senior Archaeological Technician for Phase II detailed mapping and test excavation of 30 archaeological sites chosen from various sub-areas of Management Region 5 on the installation's Precision Impact Range Area. Operated high-precision global positioning system equipment for detailed site mapping, conducted test excavations, and laboratory analyses to determine National Register eligibility of the 30 archaeological sites.

Oregon and Northern California Fiber Optics Installation Project: 360 Networks Incorporated, various cities in Southern Oregon and Northern California. 6/2000-1/2003. Senior Archaeological Technician. Duties included providing technical and professional support in monitoring compliance for the protection of cultural resources for a fiber optic conduit installation program in southern Oregon and northern California, monitoring of construction activities and conducting archaeological surveys. Other duties included, working closely with Native American monitors, serving as a liaison between construction personnel, tribal monitors, and agency representatives, and ensured that all construction activities are performed in accordance with California Public Utilities Commission (CPUC) mitigation requirements and Forest Service/agency permit conditions.

BEN LUDWIG

Benedict Ludwig has over 5 years of professional and academic experience including prehistoric, and historic Archaeology. He had conducted extensive research at State historic preservation offices, and used GIS to compile background research to assist with cultural and archaeological aspects of transmission line, and wind farm projects. He has particular knowledge of field techniques, including survey, sampling, recording, and excavation of prehistoric and historic archaeological sites. He has also performed archaeological monitoring on construction projects. In addition to corporate experience he has extensive experience excavating and conducting research abroad for academic, and cultural resource management projects in Teverya/Tiberias, Israel, southernmost Germany, and along the southern and western Cape of South Africa.

EDUCATION

BA Anthropology, focus on Archaeology, Stony Brook University, 2001
BS Biochemistry, Stony Brook University 2001
MSc. Archaeology, University of Cape Town, 2005

CORPORATION PROJECT EXPERIENCE

Cultural Resources Monitor, Crew Chief 10/2007, 2/2008, 3/2008
Willow Creek Wind Project. Cecil, Or.
Performed records search at Oregon SHPO, and led a pedestrian survey of the project area for a prospective wind generated electrical power installation near the Columbia Gorge in between Arlington, and Boardman Oregon. Assisted in recommendations and analysis report and presented client with a suite of compliance options to facilitate efficient project implementation and protection of resources. Executed additional archaeological monitoring and survey to accommodate project initiation and meet due diligence measures at behest of client. In process of compiling results and finishing shovel test for transmission line as of 3/18/2008.

Assistant Social Scientist, Crew Chief. 11/2007, 12/2007, 1/2008
Ford Dry Lake bed Project Genesis. Potential Solar installation near Blythe, Ca.
Participated in a large pedestrian field survey on BLM land to prepare for possible solar power facility installation. Participated in recordation of large diffuse archaeological sites and archaeological site and isolate form preparation for California state departments of Parks and Recreation. Assisted in *coordination* of crew and executing daily fieldwork. Helped a crew of ten new hires in negotiating and learning the various Tetra tech institutional procedures for timesheets, expense reports and hiring packets.

Cultural Resources Monitor, 7/2007-9/2007 and 10/2007, 11/2007
Jackson Park Housing Complex in Jackson Park Naval Reservation, Bremerton, Wa
Performed archaeological monitoring of ground disturbing activities in a Naval-housing complex. Work was performed in fulfillment of an Environmental protection agency mandate to remove unexploded ordinance from the compound and the concerns of the S'quamish tribe about protecting historical and cultural resources. Compiled a detailed appendix of findings and submitted a detailed analysis in a professional report.

Assistant Social Scientist, Crew Chief 5/2007, 6/2007
Golden Hills Wind Project, Wasco Or.
Conducted a thorough records search at the Oregon SHPO and wrote a recommendations report. Initiated a field survey to thoroughly search project area for archaeological potential. This involved pedestrian survey, GPS recordation and site recordation. Assisted in site form preparation for records at the Oregon SHPO and performed additional historical records and atlas research at Oregon

Historical Society to help compile a predictive model for locating and evaluating homesteads and remnants of the Oregon trail.

Archaeological Technician, 4/2007
Colville-Republic in kind pole replacement for Bonneville Power Authority Electrical Transmission line. Colville, Wa
An assessment of the archaeological potential of a pole replacement undertaking by Bonneville Power Authority on a transmission line. The transmission line runs between the towns of Colville, and Republic in northeastern Washington. Compiled a photographic Appendix F-1nd log for inclusion in a professional quality report.

Assistant Social Scientist, Crew Chief 2/2007, 3/2007
Dayton Wind Farm, Dayton, WA
A preliminary background records search, scoping and budgeting was performed for a small wind farm site in northeast Washington. A field survey was initiated and assisted in production of a detailed report to allow the client to comply with a SEPA checklist.

Assistant Social Scientist, 9/2006-2/2007
Various project in OR and WA.
Performed analyses of potential areas of effect for wind farm developments and cellular communication facilities. This involved using GIS and internet databases to evaluate projects for conflicts and interpreting these impacts in reference to NEPA, SEPA, Section 106 and other federal state and local regulations, programmatic agreements and memoranda. Site selection was performed for meteorological towers on BLM land in accordance with a SEPA checklist. Additionally required extensive travel for SHPO records search, and pedestrian survey coupled with shovel testing, site recordation and comprehensive report compilation.

Assistant Social Scientist, 9/2006-2/2007
Various projects in other western states
Additionally remote analysis was performed for wind farm projects in Illinois, Texas, South Dakota, Utah and Idaho using the varied means provided by the states for accessing Freedom of Information Act protected historic and archaeological databases. Reports were compiled with analysis and recommendations.

Archaeological Technician, 7/2006-9/2006
McChord Air Force Base Evaluation of Archaeological Sites, McChord Air Force Base, WA
Functioned as a technician for a Phase II archaeological investigation of four historic homestead sites in the south approach zone at McChord AFB. Tasks performed included relocation and sample excavation of four homestead locales, which were amalgamated into the base in 1923. Strategic site relocation, and sampling was employed. Artifacts and features were identified and cataloged in the field and documented with GPS.

Archaeological Technician, 7/2006
UPC Cascade Wind Project, Wasco County, OR
Conducted a regimented pedestrian survey for the Cascade Wind Farm Project in Wasco County, WA. Tasks included survey and documentation of archaeological sites.

Archaeological Technician, (AMEC) 6/2006
Thornburgh destination resort project, Sisters, OR
Independently executed the relocation and investigation of 5 acres of land associated with the Thornburgh destination resort project near Sisters, OR. Used Trimble GPS to document and update inventory of sites allowing project report to proceed.

Archaeological Technician (AMEC) 6/2006
Novelty Hill Road expansion Project, Redmond, WA
Performed a preliminary assessment and inventory of historical structures in the town of Redmond, WA. Assisted in locating, photographing, and recording all buildings within the APE for several proposed road expansions in response to traffic congestion associated with the Microsoft flagship campus.

Archaeological Technician (AMEC) 3/2006-4/2006
Thornburgh destination resort project, Sisters, OR
A survey, and test excavation of 250 acres of privately owned land proposed for development. Entailed pedestrian survey, extensive documentation, strategic soil probes, and 10 one-meter square test units. Work was conducted at standards appropriate for Goal 5 compliance.

Archaeological Technician 2/2006
Aspen Lakes Destination Resort, Sisters, Oregon
Conducted background research and a Phase I survey of a 380 acre site in Sisters Oregon. Entailed systematic transect survey taking detailed field notes for Goal 5 compliance of a potential development.

Archaeological Technician 2/2006
Milford Wind farm project, Moab, Utah
Conducted background research at the SHPO office in Salt Lake City, Utah for a proposed wind energy development project in southwestern Utah.

Archaeological Technician, 10/2005-2/2006
Edwards Air Force Base Evaluation of Archeological Sites, Edwards AFB, CA
Served as a technician for the Phase I EAFB northeastern boundary archaeological survey. Duties included field supervision of crew, implementation of survey techniques, site relocation and documentation, and new site recording, and collection of artifacts. Served as technician for Phase II excavation of 23 prehistoric sites duties include standard excavation practices, lithic characterization, daily collection of artifacts and excavation documentation.

Archaeological field technician 9/2005-10/2005
New York District–U.S. Army Corps of Engineers, Davids Island Historic and Archaeological District, Former Fort Slocum, New Rochelle, Westchester County, New York
Phase IB archaeological survey and testing around buildings and structures in the 78-acre Davids Island Historic and Archaeological District. Included in the archaeological district is Fort Slocum, a former army base. The work entailed 640 shovel tests and 10 test units among more than 40 historic buildings and in the remnants of a parade ground.

PREVIOUS EXPERIENCE

Excavator/Technician 6/2003-7/2003
Unnamed Burial site, Green Point, Cape Town, South Africa
Archaeological excavator/technician at an unmapped gravesite in the Green Point area of Cape Town, South Africa. The site contained several undocumented impromptu slave and pauper burial grounds. Skeletal remains from approximately 1100 individuals were professionally removed from a Hospital burial ground and repatriated. Conducted under Dave Halkett, and Tim Hart of the Archaeological contracts office at the University of Cape Town.

Student/Excavator 2/2002-5/2002Stonybrook
University "Cape Field School" in southern African Archaeology
Advised by Dr. Chris Henshilwood of Bergen University. Excavated "Vaalkraans" a Later Stone Age rock shelter with a midden deposit was piece plotted in three dimensions to reconstruct hearth features, and gather very fine spatial data. A 3.8 grade point average was obtained for mastery of excavation, survey, and report writing

Excavator/Technician 7/2001-9/2001, and 6/2002-8/2002
Directed by Dr. Nick Conard of Tuebingen University. Paid excavator for two field seasons. Project involved simultaneously investigating the Aurignacian sites of Geissenklosterle, and Hohle Fels in southern Germany. Involved in all aspects of excavation; excavating, wet sieving, sorting, data logging, curation, preliminary research and using survey equipment for detailed piece plotting.

Excavator and Field Technician 6/2001-7/2001
University of Haifa, excavations at Ohallo II
Directed by Dani Nadel of Haifa University with funding from National Geographic. Ohalo II is an Epi-paleolithic site on the Sea of Galilee, near Tiberias/Teverya Israel. This was a professional academic investigation of a prehistoric fishing settlement. The settlement was occupied approximately 19000 years ago, and was encapsulated by rising lake levels after the peak of the last ice age.

PUBLICATIONS & PRESENTATIONS

South African Archaeologists Association bi-annual conference April 2004
Delivered an original paper on Master's Thesis research. *Style and Personal Ornamentation in the Southern Cape during the Holocene: A comparison of Matjes River Rock Shelter, and Nelson Bay Cave.*

Sealy, J., Ludwig, B. and Henderson, Z. 2006. *New radiocarbon dates for Matjes River Rock Shelter.* South African Archaeological Bulletin.
Cultural Resources

PROFESSIONAL REFERENCES

Lara Rooke AMEC Cultural Resource Specialist (425) 820-4669
John J. Shea Associate Professor, Anthropology Department State University of New York at Stony Brook, Stony Brook, NY USA 11794-4364, Tel: 631-632-7665, email: John.Shea@sunysb.edu
My website: http://www.sunysb.edu/anthro/Shea%20webpage/index.html

ERICA MAIER

Erica Maier has over 7 years experience in archaeological field work.

EDUCATION

1999-2002, University of California, Santa Barbara, CA
Bachelor of Arts Degree, Cultural Anthropology, Archaeology Emphasis

1997-1999, Santa Rosa Junior College, Santa Rosa, CA
General Education, Undergraduate Transfer Fall 1999

1993-1997, El Molino High School, Forestville, CA
High School Diploma, June 1997

PROJECT EXPERIENCE

November 2007-present, Tetra Tech, Archaeological Field Technician, Sacramento, California

Duties: Survey, GPS mapping and site recordation.

Relevant knowledge/skills: Use of Trimble GPS unit, efficient approach to recording sites, off-road vehicle use in diverse desert conditions.

Supervisor: John Fogerty, (916) 853-4542

January 2005-March 2007, CH2M HILL, Edwards Air Force Base Environmental Management, Archaeologist/Cultural Resource Manager, Edwards, California

Duties: Protection and management of base-wide cultural resources in support of the Archaeological Resource Protection Act, routine monitoring of resources, data collection and subsequent record preparation, monthly and annual reporting, resource survey, excavation, laboratory processing and data entry.

Relevant knowledge/skills: Off-road vehicle use in diverse conditions; navigation using USGS quad maps, compass, Trimble GPS unit, GIS maps and software; research and records management; service to government customer; outdoor exposure in year-round adverse weather conditions; travel to remote sites on foot; regular use of software including Microsoft, Excel, GIS (Geomedia); experience working on desert prehistoric, historic, and military era resources.

Supervisor: Lawrence McGetrick, Archaeologist/Conservation Manager (current) (661) 277-9144; Susan Theiss, Conservation Manager (previous) (661) 816-8829

June 2003-December 2004, Garcia and Associates, Environmental and Cultural Resource Management, Archaeologist, San Anselmo, California

Duties: Archaeological survey, excavation, and monitoring; report contributor; production of site record forms; artifact processing.

Relevant knowledge/skills: Off-road vehicle use; navigation using compass, GPS unit, and topographic maps.

Supervisor: Stephen Bryne, Caltrans (current) Archaeologist, (510) 622-0152

November 2002-January 2003, Applied Earthworks, Inc., Archaeological Consulting, Archaeological Technician, Lompoc, California

Duties: *Field excavation, laboratory artifact sample processing, data entry.*

Supervisor: Ann Munns, Archaeologist, (805) 737-4119

October 2001-August 2002, UCSB Institute for Social, Behavioral, Economic Research, Archaeological Assistant, Santa Barbara//Santa Cruz Island, California

Duties: *Survey, excavation, mapping with compass and tape, artifact sorting and analysis, catalogue coding and data entry.*

Supervisor: Jennifer E. Perry, Instructor, Department of Anthropology, Pomona College, (909) 607-9675

January 2002-August 2002, UCSB Department of Anthropology, Research Assistant, Santa Barbara/Santa Cruz Island, California

Duties: *excavation, mapping, artifact sorting and analysis.*

Supervisor: Peter Paige, deceased.

April 2001-December 2001, UCSB Repository for Archaeological and Ethnographic Collections, Research Assistant, Santa Barbara, California

Duties: *Curation of archaeological collections.*

Supervisor: Peter Paige, deceased.

ARABESQUE SAID

EDUCATION

Fall 2006 — Arabic XL 1B. University of California, Los Angeles

June 2006 — B.A., University of California, Riverside
Major: Anthropology. Concentration: Archaeology

EXPERIENCE

January2008- April 2008
Archaeological Crew Member, URS Corporation

- 7,500 Acre pedestrian survey in the Yuha desert, CA
- Responsibilities included locating prehistoric and historic sites, locating previously recorded sites, taking and recording photographs of sites and artifacts, filing out DPR forms, and creating site maps with a Trimble,

November 2007 — Phase 1 Field Survey. LSA Associates, Inc.

- 5,200 acre pedestrian survey in Chuckwalla Valley, CA

Archaeological Crew Member. LSA Associates, Inc.

- Mid County Parkway Project. Testing at five prehistoric sites in Corona, Hemet, and Perris, CA

October 2007 — Proposed Cell Tower Site.

- Sunnyvale, CA.
- Responsibilities included, archaeological preconstruction records search, field survey, and photograph proposed cell tower site.

September 2007 — Archaeological Field Assistant. MBA.

- Testing at one prehistoric site and numerous historical sites in Chino, CA.
- Responsibilities included pedestrian survey, excavation, screening, note keeping, draw, describe, and photograph historical structures on various ranches.

August 2007 — Archaeological Field Assistant. MBA.

- Testing at numerous historical sites in Redlands, CA.
- Draw, map, describe and photograph historical structures in Redlands, CA.
- Responsibilities included excavation of trenches, using a variety of techniques, artifact collection, note keeping, screening, and sidewall profile drawing.

August 2007 — Archaeological Field Assistant. CRM Tech.

- Testing at one prehistoric site in Indio, CA.
- Responsibilities included excavation of units, using a variety of techniques, screening, note keeping, artifact collection, and unit profile drawing.

July 2007 — Phase 1 Field Survey. MBA.

- Numerous pedestrian surveys in Moreno Valley, CA to locate, draw, photograph and assess historic and prehistoric features for future development projects.

June 2007-July 2007 Archaeological Field Assistant. MBA.

- Testing of numerous prehistoric sites in Barstow, CA. Responsibilities included excavation of units and test pits, using a variety of techniques, screening, note keeping, artifact collection, and unit profile drawing.
- Draw, describe, and photograph historic structures on Lenwood Ranch in Barstow, CA.

2005-Present Information Officer. Eastern Information Center. Riverside, California

- Manage and process records, reports and maps related to archaeological and historical sites in Riverside, Inyo and Mono counties
- Conduct record searches for archaeologists, development firms, and government agencies

Summer 2006 Laboratory Assistant. Archaeological Research Unit. University of California, Riverside

- Assisted in the laboratory analysis of stone artifacts collected from the Mojave Desert.

2003-2004 Volunteer. Natural History Museum, Los Angeles, California.

- Developed and designed activities to help families and children learn about the various exhibits in the Natural History Museum with a creative and interactive approach.
- Participated in Family Fun Days at different locations each month.

RELEVANT EXPERIENCE

Spring 2007 Audited Anthropology 191: Seminar in Cultural Resources Management. University of California, Riverside

Fall 2004 Field Course in Archaeology: Survey and Documentation. University of California, Riverside

- Professor: Phil Wilke
- Conducted field surveys of historic and aboriginal archaeological sites in Southern California.
- Mapped sites
- Documented sites on primary and archaeological site records

Spring 2004 Geology Field Studies, Mojave National Preserve and San Andreas Fault from San Bernardino to central coast. Riverside Community College, California.

Fall 2003 Geology Field Studies of the Colorado Plateau

HONORS AND AWARDS

Spring 2005 Dean's Honors List, University of California, Riverside

Fall 2002-2004 President's Honors List, Riverside Community College, California

ADDITIONAL SKILLS

- Extensive experience with Windows XP, Mac OS, Microsoft Office, Internet Explorer, Firefox, ArcPad, and TerraSync. Familiarity with Adobe Photoshop.
- Thorough knowledge of a 7.5' USGS topographic map, compass, range finder, and Trimble
- Fluent in Spanish; reading and writing ability in Arabic

REFERENCES

Available upon request

VALERIE A. PARKER

EDUCATION

1997-2003	California State University, Long Beach Bachelors of Arts Degree, History
2007 – present	California State University, Long Beach Post Baccalaureate work towards a Masters in History

EMPLOYMENT HISTORY:

Archaeologist, December 2006 – Present
Tetra Tech, San Bernardino, CA
Took part in Archaeological Survey and Excavation, which included collecting artifacts, mapping sites, and excavation. Responsible for creating electronic documentation, as required by Base and County Record offices, for the recording of historic information obtained during excavation. Assisted in closing out various Archaeological Projects completed at Edwards Air Force Base. Aided in final stages of Report Production including quality control and delivery to client.

Operations Assistant, July 2005 – September 2006
Jetsave and Thomson America & Canada, Hollywood, CA
Solely responsible for managing domestic and Canadian aspects of North American Featured Independent Travel Product serving over 20,000 passengers per annum. Duties include producing daily reports of all hotel arrivals, confirming all reservations, and maintaining relationships with the Sales and Reservations Departments of featured hotels. Responsible for the resolution of any booking related issues that may arise where reservations are not confirmed for requested hotel, and ensuring that all hotels have Direct Bill information on file for the company. Send out daily requests for additional bookings beyond contracted allotment. Ensure Tour Directors have accurate and up to date information necessary for operating tours.

Office Manager and Lab Technician, August 2004 – March 2005
Cogstone Resource Management Inc., Santa Ana, CA
Responsible for keeping employee Human Resource files up to date with current government requirements, and ensuring that all new employees received and understood required company paperwork. Assisted with Marketing to place company employees on County and City Qualified Paleontology and Archaeology Consultants lists. Ensured that timesheets were correctly completed for weekly submission to the Accountant. In charge of ordering supplies, liaising with janitorial company and other contracted services, server backups, and general office organization. As Lab Technician was responsible for cleaning, cataloging, and organizing all artifacts collected from project locations. Assisted Librarian with the cataloging and inputting of all company books, journals, and reports.

Documentation Coordinator, February 2004 – August 2004
Travel Corporation of America, Newport Beach, CA
Documentation Coordinator with a Luxury Travel Company responsible for providing clients with pre trip information; ensuring that proper travel documentation including passports, travel visas, travel insurance, and other company required tour information is in place. Assisted with final documents, ensuring clients had all travel information needed to join tours including pertinent air travel and hotel information. Aided Sales Representatives to ensure that all client files were up to date for the Tour Managers.

Archaeologist, January 2003 – August 2003
Earth Tech, Colton, CA
Conducted Archaeological Survey and Excavation work at Edwards Air Force Base, which included collecting artifacts, mapping sites, and excavation. Responsible for creating electronic documentation, as required by Base and County Record offices, for the recording of historic information obtained during excavation. Assisted Principal Investigators in drafting the report of all findings from the project, by producing spreadsheets listing complete details of all artifacts collected and work performed at each site.

Administrative Assistant, **August 2002 – December 2002**
Meat Hygiene Service, Cardiff, Wales, UK
Responsible for collecting information regarding animal testing taking place around the country to ensure that all meat was safe for human consumption; compiled said information into excel spreadsheets and distributed to Regional Managers for processing. Maintained contact databases for all farm and testing locations in the United Kingdom, and kept procedure manuals up to date in compliance with Government regulations.

Administrative Assistant, January 2001 – July 2002
Litchfield Entertainment Company, Inc., Los Angeles, CA
Responsible for collecting contracts, television schedules, and media in relation to Music Publishing, for clients including Production companies, Advertisers, and Artists. Submitted necessary paperwork and media to the Music Rights Societies for Publishing and collected royalties on behalf of various clients. Maintained office supplies, video and audio library, and contract files.

ACTIVITIES:

London University Study Abroad Program
January 2000 - April 2000

BUNAC - Work in Britain Program
Summer - Winter 2002

APPENDIX F-2

Environmental Data Report (EDR)

Alta Vista
21215 220th Street West
Lancaster, CA 93536

Inquiry Number: 2230727.1
May 29, 2008

The EDR Aerial Photo Decade Package

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDRs professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

Date EDR Searched Historical Sources:

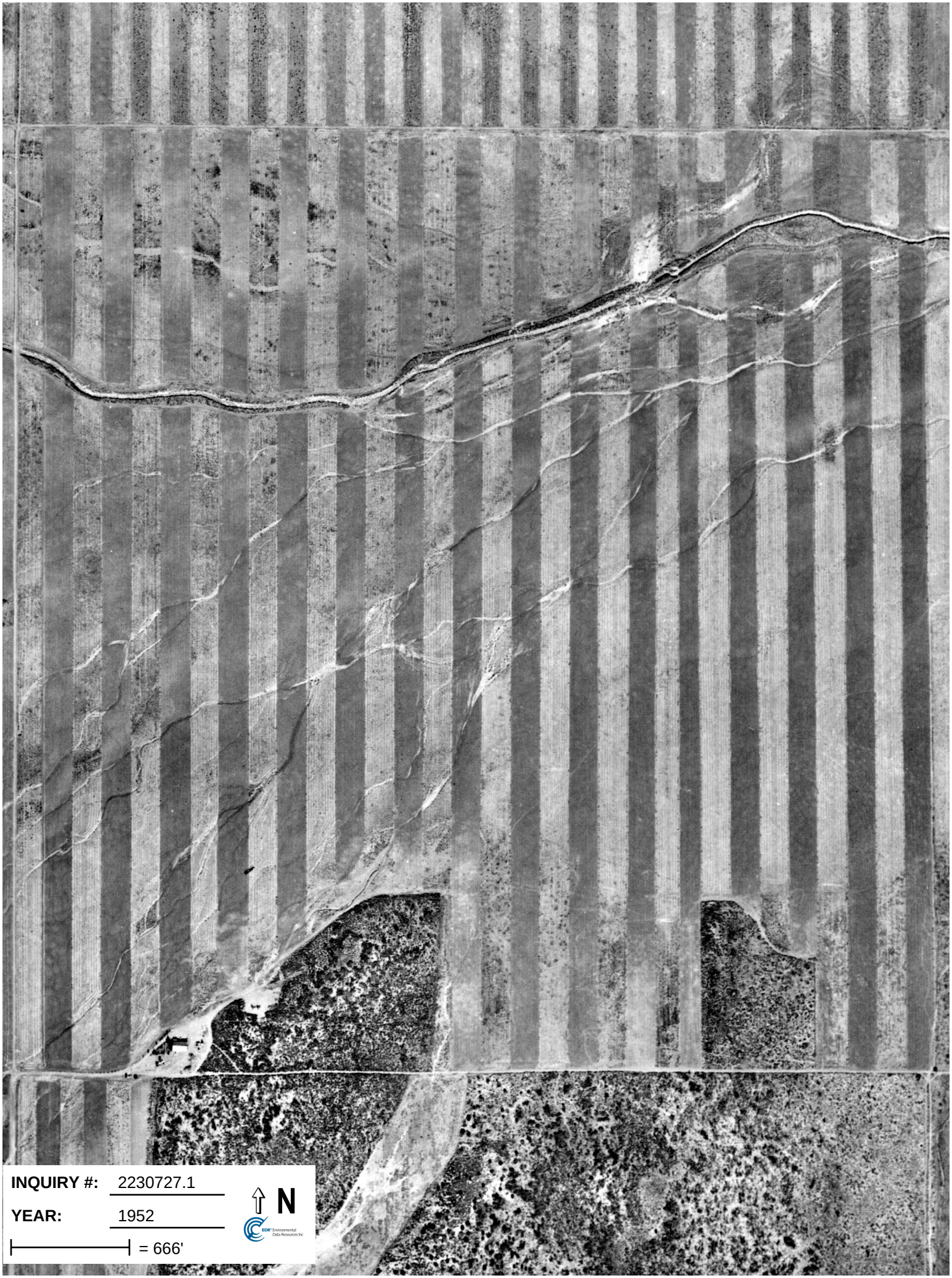
Aerial Photography May 29, 2008

Target Property:

21215 220th Street West

Lancaster, CA 93536

Year	***Scale***	***Details***	***Source***
1952	Aerial Photograph. Scale: 1"=666'	Flight Year: 1952	Pacific Air
1968	Aerial Photograph. Scale: 1"=666'	Flight Year: 1968	Teledyne
1989	Aerial Photograph. Scale: 1"=666'	Flight Year: 1989	USGS
1994	Aerial Photograph. Scale: 1"=666'	Flight Year: 1994	USGS
2002	Aerial Photograph. Scale: 1"=666'	Flight Year: 2002	USGS
2005	Aerial Photograph. Scale: 1"=484'	Flight Year: 2005	EDR


INQUIRY #: 2230727.1
YEAR: 1952
= 666'
N

INQUIRY #: 2230727.1
YEAR: 1968
= 666'
N

INQUIRY #: 2230727.1
YEAR: 1989
= 666'
N

INQUIRY #: 2230727.1
YEAR: 1994
= 666'
N

INQUIRY #: 2230727.1
YEAR: 2002
= 666'
N

INQUIRY #: 2230727.1
YEAR: 2005
= 484'
N

APPENDIX F-3

Confidential Record Search Results

(Submitted Separately With a Request for Confidentiality)

South Central Coastal Information Center
California State University, Fullerton
Department of Anthropology MH-426
800 North State College Boulevard
Fullerton, CA 92834-6846
714.278.5395 / FAX 714.278.5542
anthro.fullerton.edu/sccic.html - sccic@fullerton.edu
California Historical Resources Information System
Orange, Los Angeles, and Ventura Counties

May 22, 2008 SCCIC #8502.5549

Ms. Jenna Farrell
Tetra Tech EC, INC.
10860 Gold Center Dr., Suite 200
Rancho Cordova, CA 95670
916.853.4575

RE: Records Search for Revised Alta Vista Project

Dear Ms. Farrell,

As per your request received on April 24, 2008, a records search was conducted for the above referenced project. The search includes a review of all recorded archaeological sites within a 1-mile radius of the project site as well as a review of cultural resource reports on file. In addition, the California Points of Historical Interest (PHI), the California Historical Landmarks (CHL), the California Register of Historical Resources (CR), the National Register of Historic Places (NR), and the California State Historic Resources Inventory (HRI) listings were reviewed for the above referenced project. The following is a discussion of the findings.

Fairmont Butte and Neenach School, CA. USGS 7.5' Quadrangles

ARCHAEOLOGICAL RESOURCES:

One archaeological site (19-001680) has been identified within a 1-mile radius of the project site. It is not are located within the project site. No sites are listed on the Archaeological Determination of Eligibility (DOE) list. No isolates have been identified within a 1-mile radius of the project site.

HISTORIC RESOURCES:

Copies of our historic maps - Neenach (1943) and Willow Springs (1943) 15' USGS - are enclosed for your review.

The California Point of Historical Interest of the Office of Historic Preservation, Department of Parks and Recreation, lists no properties within a 1-mile radius of the project site.

The California Historical Landmarks of the Office of Historic Preservation, Department of Parks and Recreation, lists no properties within a 1-mile radius of the project site.

The California Register of Historic Places lists no properties within a 1-mile radius of the project site. These are properties determined to have a National Register of Historic Places Status of 1 or 2, a California Historical Landmark numbering 770 and higher, or a Point of Historical Interest listed after 1/1/1998.

The National Register of Historic Places lists no properties within a 1-mile radius of the project site.

The California Historic Resources Inventory lists no properties that have been evaluated for historical significance within a 1-mile radius of the project site.

PREVIOUS CULTURAL RESOURCES INVESTIGATIONS:

Two studies (LA9076* and LA9078*) have been conducted within a 1-mile radius of the project site. Of these, both are located within the project site. There is one additional investigation located on the Neenach School, CA 7.5' USGS Quadrangle that is potentially within a 1-mile radius of the project site. This report is not mapped due to insufficient locational information.
(= Located within the project site)*

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 714.278.5395 Monday through Thursday 9:00 am to 3:30 pm.

Should you require any additional information for the above referenced project, reference the SCCIC number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Sincerely,
SCCIC

Michelle Galaz
Staff Researcher

Enclosures:

(X) Maps – 7.5' USGS Quadrangle, 15' USGS Quadrangle –5 pages
(X) Bibliography of Unmapped Reports – 1 page
(X) Site Records – (19-001680) – 5 pages
(X) Survey Reports – (LA9076 and LA9078) – 26 pages
(X) Confidentiality Form
(X) Invoice #8502.5549

[redacted]

KERN CO
LOS ANGELES CO

T 9 N

AVENUE A
AVENUE B
AVENUE C
AVENUE D
WEST 210TH STREET
WEST 200TH STREET
WEST 190TH STREET
WEST 235TH STREET
LANCASTER ROAD
CALIFORNIA

LA9078*
LA9076*
1680H

Gorrindo Ranch
Snyder Ranch
Neenach Substation
BM 2820
BM 3015
Well
Water Tank
Wells

Neenach School
USGS 7.5" PR 1974

Fairmont Butte, CA
USGS 7.5" PR 1974
SCCIC # 8502
May 2008

South Central Coastal Information Center
California State University, Fullerton
Department of Anthropology MH-426
800 North State College Boulevard
Fullerton, CA 92834-6846
714.278.5395 / FAX 714.278.5542
anthro.fullerton.edu/sccic.html - sccic@fullerton.edu
California Historical Resources Information System
Orange, Los Angeles, and Ventura Counties

February 27, 2008 SCCIC #8318.5387

Ms. Jenna Farrell
Tetra Tech EC, Inc.
10860 Gold Center Drive, Suite 200
Rancho Cordova, CA 95670
916-853-4575

RE: Records Search for Alta Vista eSolar Project

Dear Ms. Farrell,

As per your request received on February 25, 2008 an expedited records search was conducted for the above referenced project. The search includes a review of all recorded archaeological sites within a ½-mile radius of the project site as well as a review of cultural resource reports on file. In addition, the California Points of Historical Interest (PHI), the California Historical Landmarks (CHL), the California Register of Historical Resources (CR), the National Register of Historic Places (NR), and the California State Historic Resources Inventory (HRI) listings were reviewed for the above referenced project. The following is a discussion of the findings.

Neenach School and Fairmont Butte, CA. USGS 7.5′ Quadrangles

ARCHAEOLOGICAL RESOURCES:

No archaeological sites have been identified within a ½-mile radius of the project site. No isolates are located within the project site.

HISTORIC RESOURCES:

Copies of our historic maps - Neenach (1943) and Willow Springs (1943) 15′ USGS - are enclosed for your review.

The California Point of Historical Interest of the Office of Historic Preservation, Department of Parks and Recreation, lists no properties within a ½-mile radius of the project site.

The California Historical Landmarks of the Office of Historic Preservation, Department of Parks and Recreation, lists no properties within a ½-mile radius of the project site.

The California Register of Historic Places lists no properties within a ½-mile radius of the project site. These are properties determined to have a National Register of Historic Places Status of 1 or 2, a California Historical Landmark numbering 770 and higher, or a Point of Historical Interest listed after 1/1/1998.

The National Register of Historic Places lists no properties within a ½-mile radius of the project site.

The California Historic Resources Inventory lists no properties that have been evaluated for historical significance within a ½-mile radius of the project site.

PREVIOUS CULTURAL RESOURCES INVESTIGATIONS:

No studies have been conducted within a ½-mile radius of the project site. There is one investigation located on the Neenach School, CA. 7.5′ USGS Quadrangle that is potentially within a ½-mile radius of the project site. This report is not mapped due to insufficient locational information.

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 714.278.5395 Monday through Thursday 9:00 am to 3:30 pm.

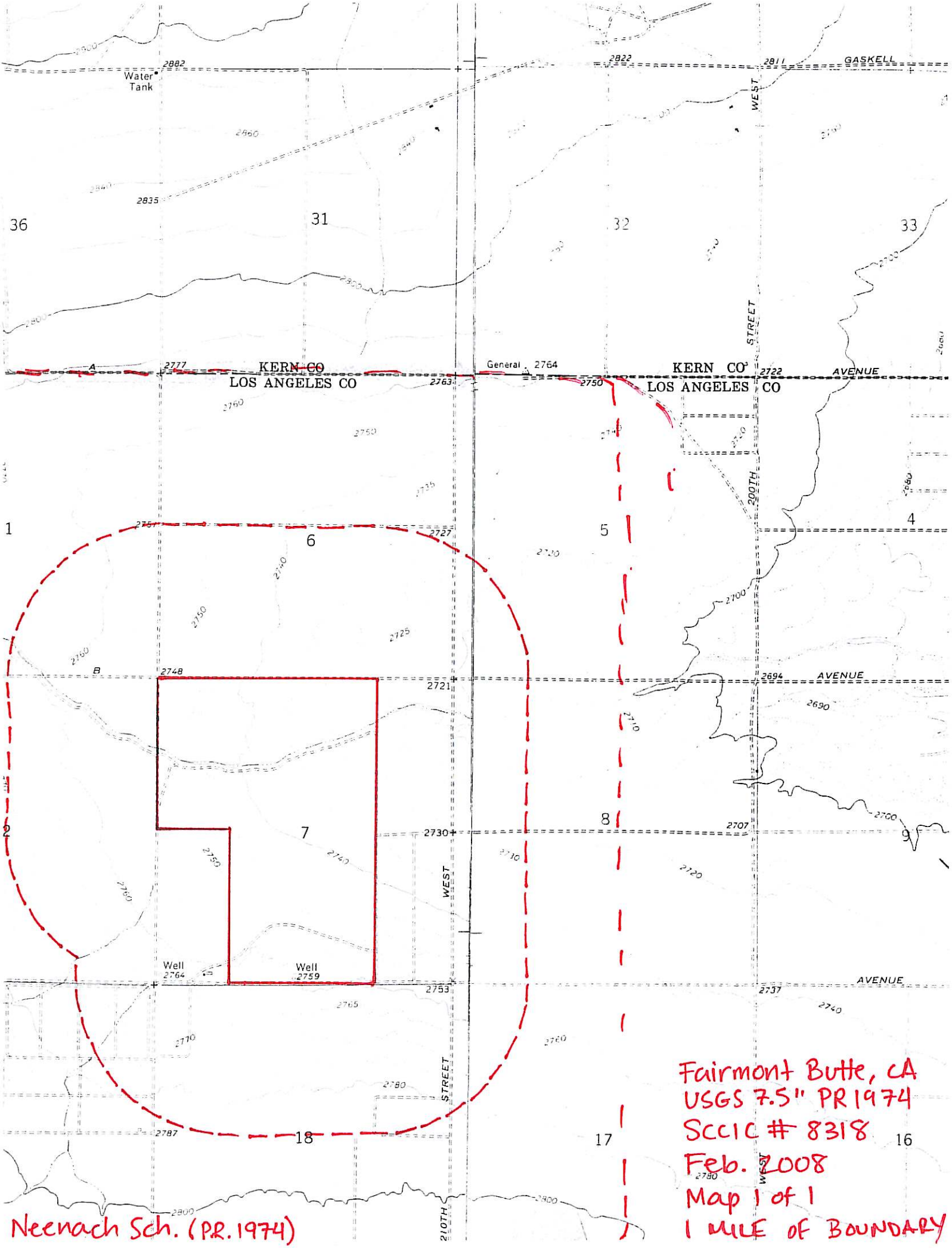
Should you require any additional information for the above referenced project, reference the SCCIC number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Sincerely,
SCCIC

Michelle Galaz
Staff Researcher

Enclosures:

(X) Maps – 7.5′ USGS Quadrangle, 15′ USGS Quadrangle – 5 pages
(X) Bibliography – 1 page
(X) Confidentiality Form
(X) Invoice #8318.5387


GASKELL
WEST
STREET
AVENUE
200TH
KERN CO
LOS ANGELES CO
KERN CO
LOS ANGELES CO
Water Tank
General
Well 2764
Well 2759
210TH
36
31
32
33
1
6
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17
16
Neenach Sch. (PR. 1974)
Fairmont Butte, CA
USGS 7.5" PR 1974
SCCIC # 8318
Feb. 2008
Map 1 of 1
1 MILE OF BOUNDARY

SCCIC Bibliography: Unmapped reports for Alta Vista eSolar Project

IC ID#: LA3588 **DATE:** 1992 **PAGES:** 527

AUTHOR: Hastey, Ed

FIRM: Bureau of Land Management

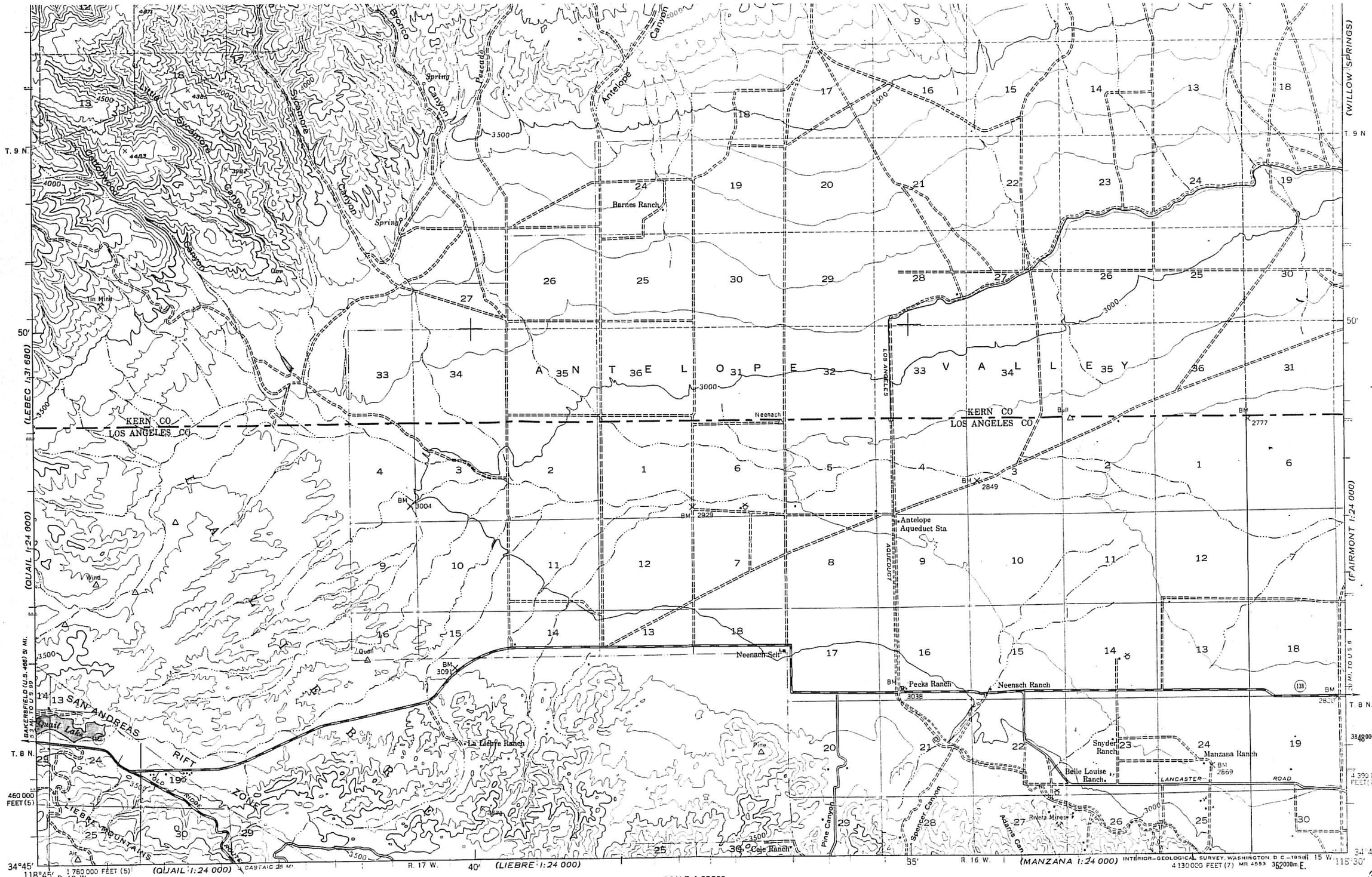
TITLE: Proposed South Coast Resource Management Plan and Final Environmental Impact Statement

AREA: 42,700 ac

SITES: None

QUADNAME: Triunfo Pass,Point Dume,Malibu Beach,Topanga,Beverly Hills,Hollywood,Calabasas,Thousand Santa Susana,Lake Hughes,Warm Springs Mountain,Green Valley,Sleepy Valley,Ritter Ridge,Newhall,Mint Canyon,Agua Dulce,Black Star Canyon,Newport Beach,Corona South,Tustin,Acton,Pacifico Mountain,Palmdale,Littlerock,Juniper Hills,Valyermo,Mescal Creek,Oat Mountain,San Fernando,Sunland,Canada Gobernadora,Alber Hill,Sitton Peak,San Clemente,Dana Point,San Juan Capistrano,Laguna Beach,Santiago Peak, Seal Beach,Condor Peak,Chilao Flat,Orange,Waterman Mtn.,Crystal Lake, Mount San Antonio,El Toro, and more

MEMO: Indexed report. This reports consists of a huge overview of Los Angeles and Orange Counties an



Mapped by the Army Map Service
Published for civil use by the Geological Survey

Control by USGS, USC&GS and USCE

Topography from aerial photographs by photogrammetric methods
Aerial photographs taken 1943

Polyconic projection. 1927 North American datum
10,000-foot grid based on California coordinate system, zones 5 and 7
1000-meter Universal Transverse Mercator grid ticks, zone 11, shown in blue

ARCHAEOLOGICAL SURVEY
UNIVERSITY OF CALIFORNIA
LOS ANGELES 24, CALIFORNIA

1943

(TEJON HILLS) 1:24 000

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

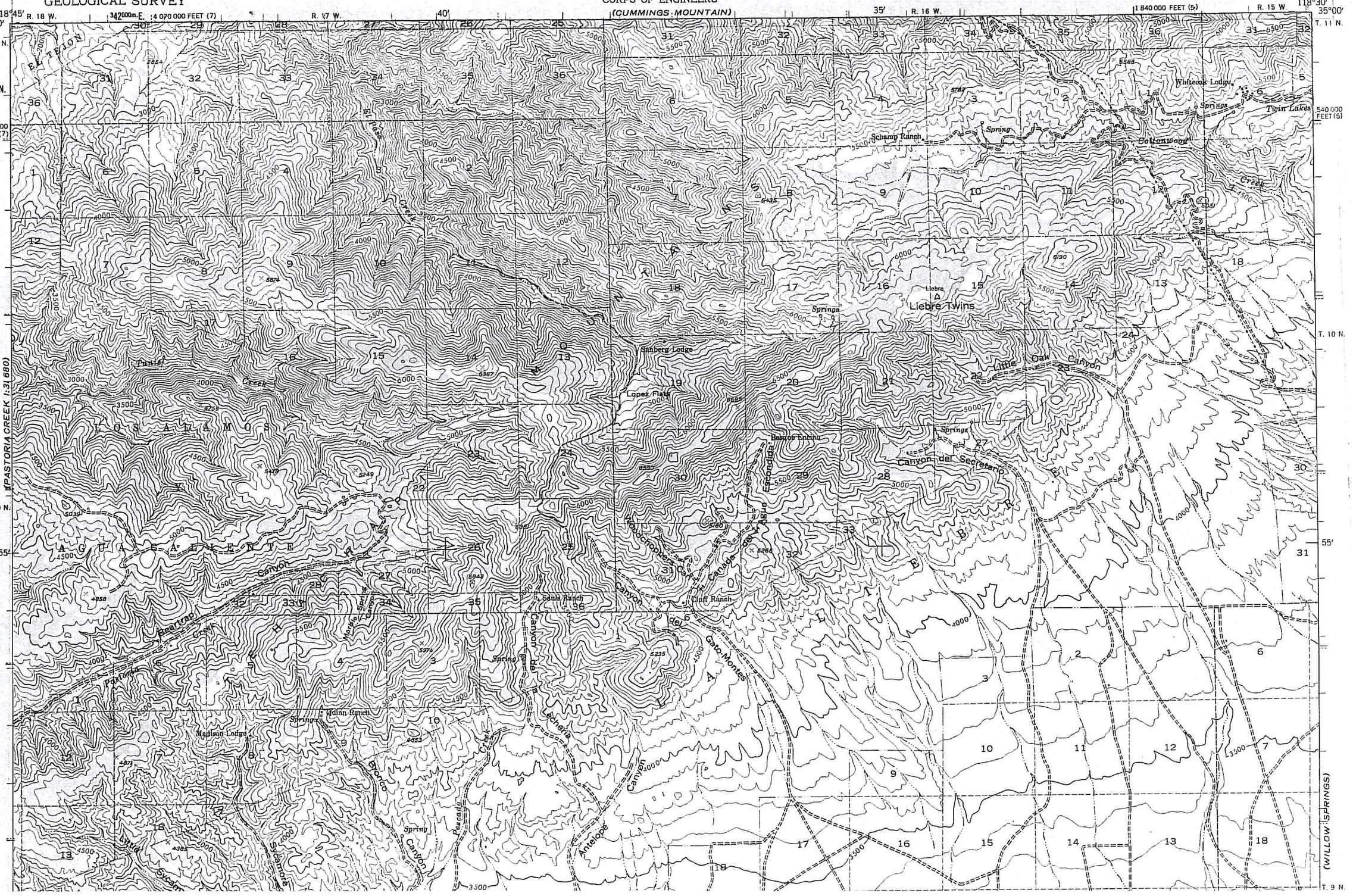
UNITED STATES
DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS

NEENACH QUADRANGLE

CALIFORNIA

15 MINUTE SERIES (TOPOGRAPHIC)

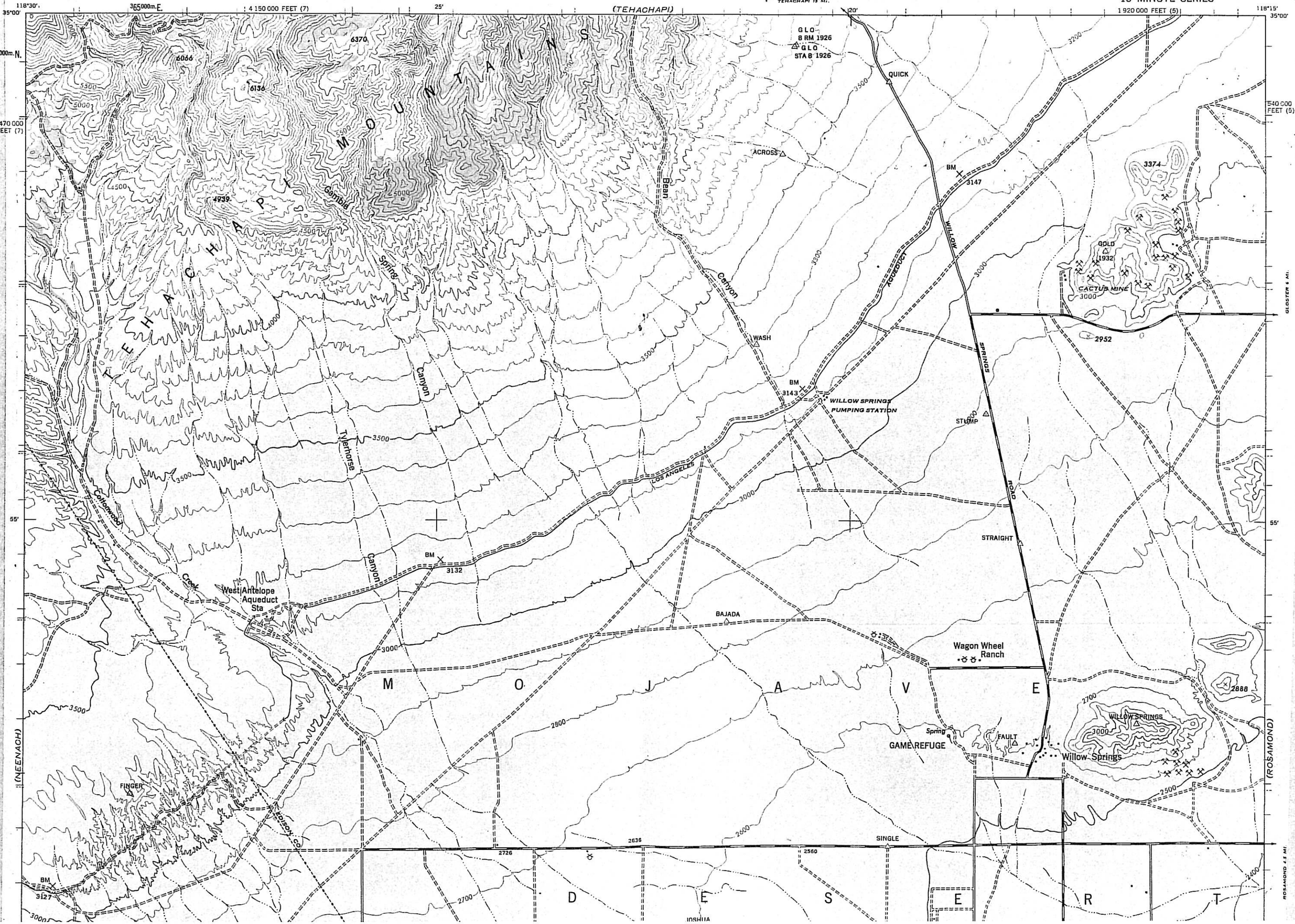
(TEHACHAPI)

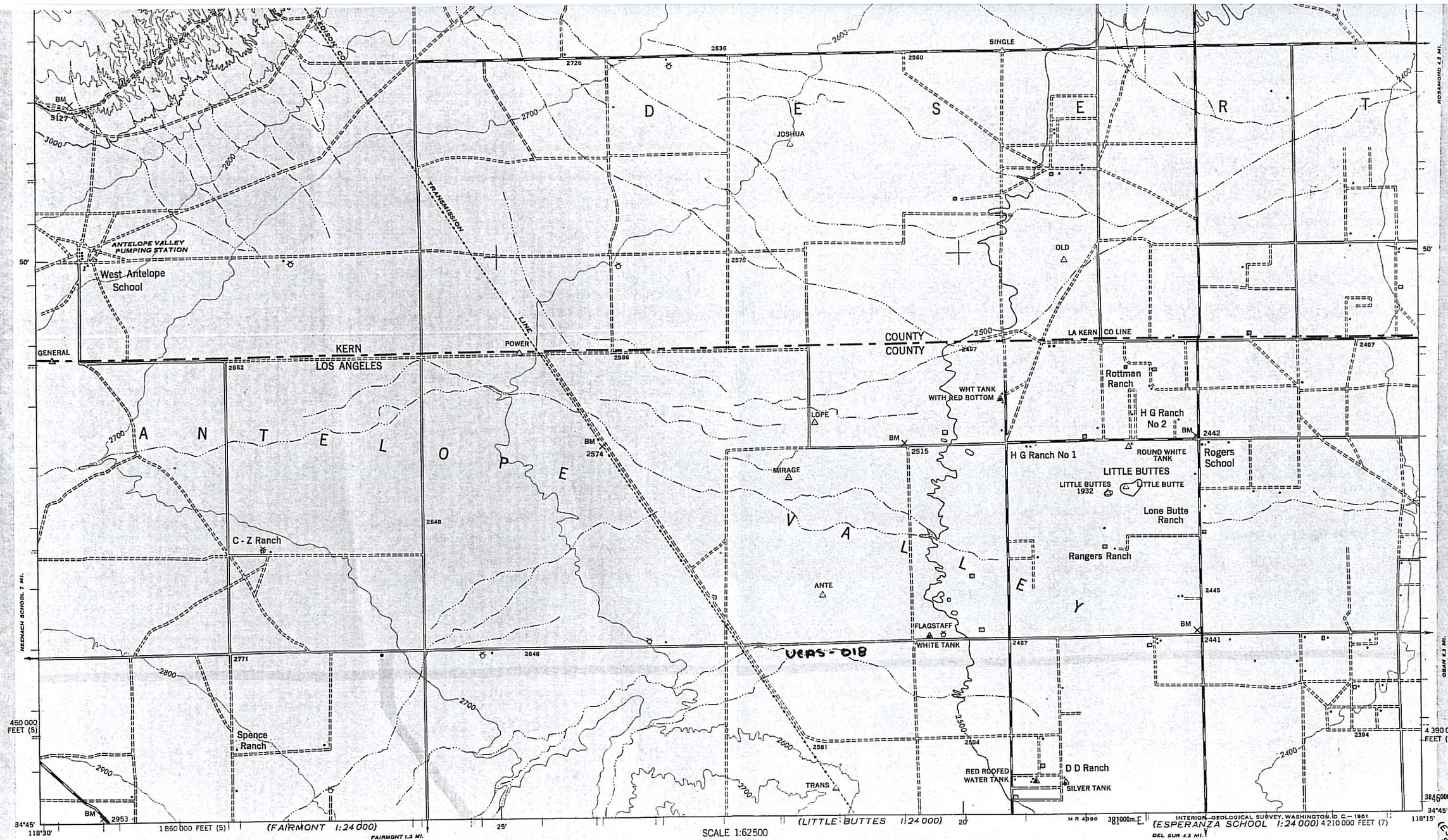


WILLOW SPRINGS

WILLOW SPRINGS QUADRANGLE
15 MINUTE SERIES

1943





Prepared under the direction of the Chief of Engineers by the Army Map Service (AM), War Department, Washington, D. C. Scale changed, marginal data revised and Universal Transverse Mercator Grid added, 1947. Copied in 1947 from California, 1:62,500, AMS, Willow Springs, 1943. Original map compiled for the Army Map Service by stereophotogrammetric methods. Horizontal and vertical control by USGS and USC&GS. Aerial photography for the Army Map Service, 1943.

SCALE 1:62500

1 ½ 0 1 2 3 4 MILES

3000 0 3000 6000 9000 12000 15000 18000 21000 FEET

1 .5 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 100 FEET
DATUM IS MEAN SEA LEVEL

TRANSVERSE MERCATOR PROJECTION
1927 NORTH AMERICAN DATUM

10,000-FOOT GRID BASED ON CALIFORNIA COORDINATE SYSTEM, ZONES 5 AND 7, SHOWN IN BLACK
1000-METER UNIVERSAL TRANSVERSE MERCATOR GRID TICKS, ZONE 11, SHOWN IN BLUE

LEGEND

ROAD DATA 1943

Hard surface, heavy duty road, more than two lanes wide — 3 LANE | 4 LANE
Hard surface, heavy duty road, two lanes wide; Federal route marker — 101
Secondary, hard surface, all weather road, two lanes wide; State route marker — 57
Loose surface, graded, dry weather road
Trail; Dirt road
Railroad in street; Carline in street

RAILROADS	Single track	Double track	UNDER CONSTRUCTION Single track	UNDER CONSTRUCTION Double track	ABANDONED Single track	ABANDONED Double track
Standard gauge						
Narrow gauge						

FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER 25, COLORADO OR WASHINGTON 25, D. C.
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

Willow Springs 1943

APPENDIX F-4

Native American Consultation Letters

Jenna Farrell/SCI/CSQ
02/25/2008 03:37 PM

To gtomei_NAHC@pacbell.net
cc
bcc
Subject Sacred Lands File Request for the proposed Alta Vista Solar Site near Lancaster, California

Dear Ms. Tomei,

eSolar has secured site control and is currently in the permitting process to construct a solar test facility in Southern California in 2008.

eSolar power plants utilize the solar power tower architecture, employing a field of sun-tracking mirrors that reflect and focus sunlight onto a thermal receiver mounted atop a tower. Unlike all other solar tower installations to date, eSolar employs a scalable approach to building large generation facilities by assembling incremental power "modules". Each module is composed of a series of heliostat mirror sub-fields, receiver towers, and a single centralized power block. In a typical module, the steam generated from thirteen tower-mounted solar receivers is routed to a 33 MW steam turbine-generator. The steam generator is air-cooled to reduce water consumption needs.

The proposed Alta Vista Project Site project area is located on vacant lots near the City of Lancaster, California (see attachment, Figure 1). The project location is described below:

Alta Vista Proposed Project Area—Township 8 North, Range 15 West, section 7, of U.S. Geological Survey (USGS) 7.5' of Neenach School, California quadrangle San Bernardino Base Line and Meridian (SBBM) (See attached Map Figure 1).

Please also notify us if there are any locations that are included in your Sacred Lands Inventory within the project vicinity.
Please reference the "eSolar Alta Vista" in your correspondence, and send the information to my attention at Tetra Tech EC, INC. 10860 Gold Center Drive, Suite 200, Rancho Cordova, CA 95670, or fax it to (916)-852-0307, or electronically. Please contact me at (916) 853-4575 or jenna.farrell@tteci.com if you have any questions. We greatly appreciate your immediate attention to this matter.

Thank you,

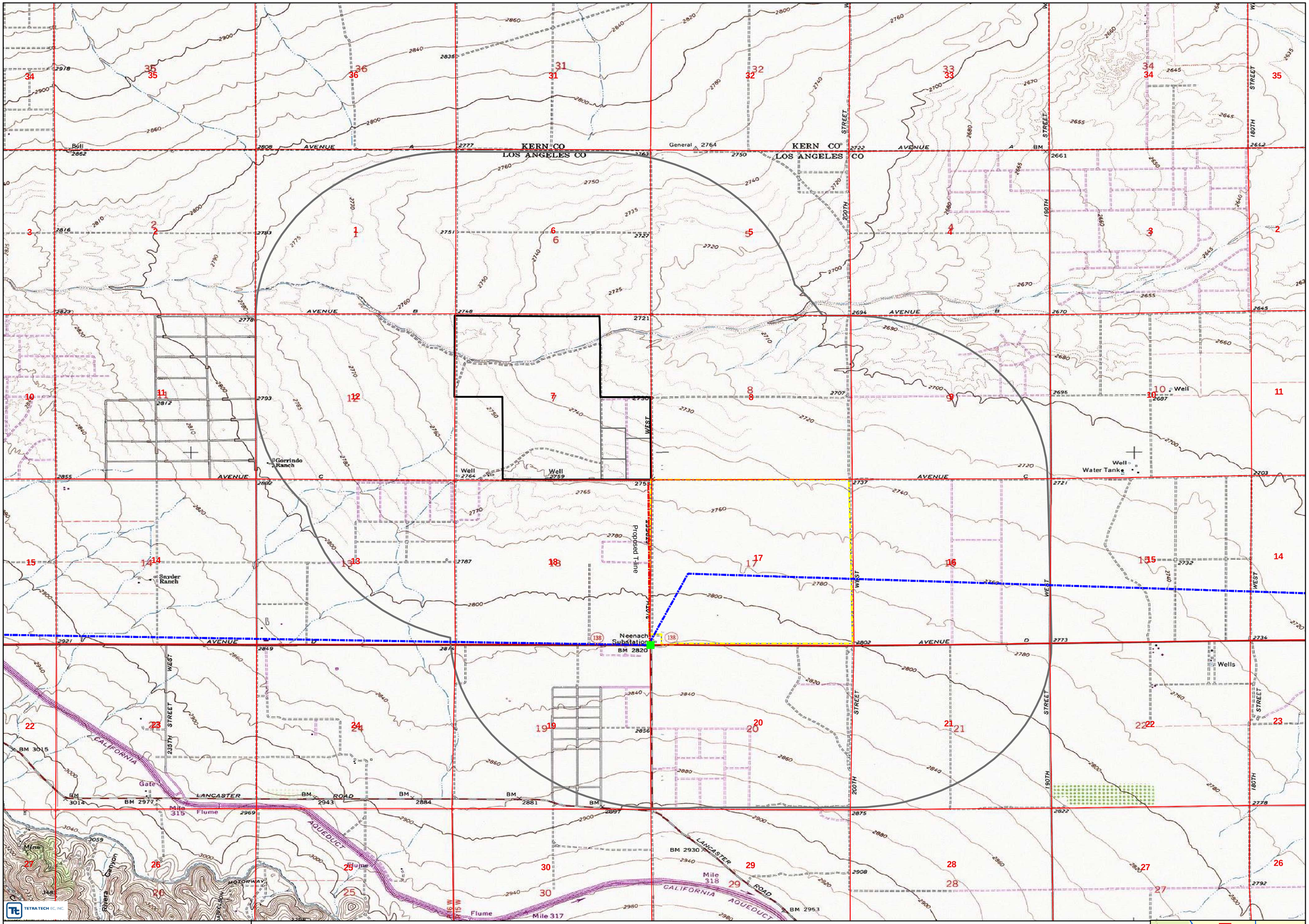
Jenna

Figure1_Alta_Vista1.pdf

Jenna Farrell | **Cultural Resource Specialist**
Direct: 916.853.4575 | Main: 916.853.4500 | Fax: 916.852.0307
Jenna.Farrell@tteci.com

Tetra Tech EC | Social Sciences
10860 Gold Center Road | Rancho Cordova, CA 95670-6024 | www.tteci.com

PLEASE NOTE: This message, including any attachments, may include confidential and/or inside information. Any distribution or use of this communication by anyone other than the intended recipient is strictly prohibited and may be unlawful. If you are not the intended recipient, please notify the sender by replying to this message and then delete it from your system.



Legend

- Neenach Substation
- Existing Transmission
- Proposed Transmission
- Sections
- Alta Vista Parcels
- Probable Boundary
- Possible Alternative Site
- 1-mile Buffer

Alta Vista Solar Generating Station

Los Angeles County, CA

QUAD: Neenach School
T8N R14W Section 1, 12-13, 24
T8N R15W Section 5-9, 16-21

N W E S

0 0.25 0.5 Miles

R:\projects_2007\eSolar\CA\maps\Alta_Vista_topo.mxd April 17, 2008

STATE OF CALIFORNIA Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390
Web Site www.nahc.ca.gov
e-mail: ds_nahc@pacbell.net

February 29, 2008

Jenna Farrell
TETRA TECH
10860 Gold Center Road
Rancho Cordova, CA 95679

Fax #: 916-852-0307
Number of pages: 2

Re: Proposed Alta Vista Proposed Project Area; Los Angeles County.

Dear Ms. Farrell:

The Native American Heritage Commission was able to perform a record search of its Sacred Lands File (SLF) for the affected project area. The SLF 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 guarantee the absence of cultural resources in any 'area of potential effect (APE).'

Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries once a project is underway. Enclosed are the nearest tribes that may have knowledge of cultural resources in the project area. A List of Native American contacts are attached to assist you. The Commission makes no recommendation of a single individual or group over another. It is advisable to contact the person listed; if they cannot supply you with specific information about the impact on cultural resources, they may be able to refer you to another tribe or person knowledgeable of the cultural resources in or near the affected project area (APE).

Lack of surface evidence of archeological resources does not preclude the existence of archeological resources. Lead agencies should consider avoidance, as defined in Section 15370 of the California Environmental Quality Act (CEQA) when significant cultural resources could be affected by a project. Also, Public Resources Code Section 5097.98 and Health & Safety Code Section 7050.5 provide for provisions for accidentally discovered archeological resources during construction and mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other than a 'dedicated cemetery. Discussion of these should be included in your environmental documents, as appropriate.

If you have any questions about this response to your request, please do not hesitate to contact me at (916) 653-6251.

Sincerely,

Dave Singleton
Program Analyst

Attachment: Native American Contact List

Native American Contacts
Los Angeles County
February 28, 2008

Charles Cooke
32835 Santiago Road
Acton , CA 93510
(661) 733-1812 - cell
suscol@intox.net

Chumash
Fernandeno
Tataviam
Kitanemuk

San Fernando Band of Mission Indians
John Valenzuela, Chairperson
P.O. Box 221838
Newhall , CA 91322
tsen2u@msn.com
(661) 753-9833 Office
(760) 885-0955 Cell
(760) 949-1604 Fax

Fernandeño
Tataviam
Serrano
Vanyume
Kitanemuk

Beverly Salazar Folkes
1931 Shadybrook Drive
Thousand Oaks , CA 91362
(805) 558-1154 - cell
805 492-7255

Chumash
Tataviam
Fetrnandeño

Randy Guzman - Folkes
1931 Shadybrook Drive
Thousand Oaks , CA 91362
ndnrandy@hotmail.com
(805) 501-5279 (cell)

Chumash
Fernandeño
Tataviam
Shoshone Paiute
Yaqui

Fernandeno Tataviam Band of Mission Indians
William Gonzalaes, Cultural/Environ Depart
601 South Brand Boulevard, Suite 102
San Fernando , CA 91340
ced@tataviam.org
(818) 837-0794 Office
(805) 501-5279 Cell
(818) 837-0796 Fax

Fernandeno
Tataviam

LA City/County Native American Indian Comm
Ron Andrade, Director
3175 West 6th Street, Rm. 403
Los Angeles , CA 90020
(213) 351-5324
(213) 386-3995 FAX

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of 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 American with regard to cultural resources for the proposed Solar Test Facility Project located at the Alta Vista Project Site near the City of Lancaster in Los Angeles County, California for which a Sacred Lands File search and Native American Contacts list were requested.

TETRA TECH EC, INC.

June 30, 2008

Randy Guzman-Folkes
1931 Shadybrook Drive
Thousand Oaks, CA 91362
805-501-5279

RE: Proposed Alta Vista Solar Site near Lancaster, California, Los Angeles County

Dear Mr. Guzman-Folkes:

eSolar has secured site control and is currently in the permitting process to construct a solar test facility on private land in Southern California in 2008.

eSolar power plants utilize the solar power tower architecture, employing a field of sun-tracking mirrors that reflect and focus sunlight onto a thermal receiver mounted atop a tower. Unlike all other solar tower installations to date, eSolar employs a scalable approach to building large generation facilities by assembling incremental power "modules". Each module is composed of a series of heliostat mirror sub-fields, receiver towers, and a single centralized power block. In a typical module, the steam generated from thirteen tower-mounted solar receivers is routed to a 33 MW steam turbine-generator. The steam generator is air-cooled to reduce water consumption needs.

The proposed Alta Vista Project Site project area is located on private agricultural land near the City of Lancaster, California (see attachment, Figure 1). The project location is described below:

Alta Vista Proposed Project Area—Township 8 North, Range 15 West, section 7, of U.S. Geological Survey (USGS) 7.5' of Neenach School, California quadrangle San Bernardino Base Line and Meridian (SBBM) (See attached Map Figure 1). The project location is entirely within plowed fields and an old dirt bike/motorcycle course. The cultural resource literature search conducted at the South Central Coastal Information Center did not identify any previously recorded archaeological sites within 1 mile of the project area. In addition, the cultural resource pedestrian survey conducted by a team of four qualified archaeologist in May 2008 did not result in the identification of any cultural resources.

The project will go though the California Environmental Quality Act (CEQA) process and Tetra Tech EC, Inc. is preparing an Application for Certification with the California Energy Commission.

10860 Gold Center Drive, Suite 200, Rancho Cordova, CA 95670-6024
Tel 916.852.8300 Fax 916.852.0307
www.tteci.com

The Native American Heritage Commission provided Tetra Tech EC, Inc. with your name and address as someone who may have knowledge of heritage lands or other resources of interest within the project area. Please notify us by mail, email, phone, or fax if there are any sites or locations of specific concern within the Alta Vista project vicinity.

Please reference the "eSolar Alta Vista" in your correspondence, and send the information to my attention at Tetra Tech EC, INC. 10860 Gold Center Drive, Suite 200, Rancho Cordova, CA 95670, or fax it to (916)-852-0307, or electronically.

Please contact me at (916) 853-4575 or jenna.farrell@tteci.com if you need additional information, have questions, or would like to discuss the project. We greatly appreciate your immediate attention to this matter.

Sincerely,

Jenna Farrell
Tetra Tech EC, Inc.
Cultural Resources Specialist

cc: Jennfier Scheffel, TtEC Project Manger
enc. Map

TETRA TECH EC, INC.

June 30, 2008

Fernandeno Tatviam Band of Mission Indians
William Gonzalaes, Cultural/Environmental Dept.
601 South Brand Boulevard, Suite 102
San Fernando, CA 91340
818-837-0794

RE: Proposed Alta Vista Solar Site near Lancaster, California

Dear Mr. Gonzalaes:

eSolar has secured site control and is currently in the permitting process to construct a solar test facility on private land in Southern California in 2008.

eSolar power plants utilize the solar power tower architecture, employing a field of sun-tracking mirrors that reflect and focus sunlight onto a thermal receiver mounted atop a tower. Unlike all other solar tower installations to date, eSolar employs a scalable approach to building large generation facilities by assembling incremental power "modules". Each module is composed of a series of heliostat mirror sub-fields, receiver towers, and a single centralized power block. In a typical module, the steam generated from thirteen tower-mounted solar receivers is routed to a 33 MW steam turbine-generator. The steam generator is air-cooled to reduce water consumption needs.

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Jenna Farrell
Tetra Tech EC, Inc.
Cultural Resources Specialist

cc: Jennfier Scheffel, TtEC Project Manger
enc. Map

TETRA TECH EC, INC.

June 30, 2008

Beverly Salazar Folkes
1931 Shadybrook Drive
Thousand Oaks, CA 91362
805-492-7255

RE: Proposed Alta Vista Solar Site near Lancaster, California, Los Angeles County

Dear Ms.Folkes:

eSolar has secured site control and is currently in the permitting process to construct a solar test facility on private land in Southern California in 2008.

eSolar power plants utilize the solar power tower architecture, employing a field of sun-tracking mirrors that reflect and focus sunlight onto a thermal receiver mounted atop a tower. Unlike all other solar tower installations to date, eSolar employs a scalable approach to building large generation facilities by assembling incremental power "modules". Each module is composed of a series of heliostat mirror sub-fields, receiver towers, and a single centralized power block. In a typical module, the steam generated from thirteen tower-mounted solar receivers is routed to a 33 MW steam turbine-generator. The steam generator is air-cooled to reduce water consumption needs.

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Jenna Farrell
Tetra Tech EC, Inc.
Cultural Resources Specialist

cc: Jennfier Scheffel, TtEC Project Manger
enc. Map

TETRA TECH EC, INC.

June 30, 2008

Charles Cooke
32835 Santiago Road
Acton, CA 93510
661-733-1812

RE: Proposed Alta Vista Solar Site near Lancaster, California, Los Angeles County

Dear Mr. Cooke:

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Jenna Farrell
Tetra Tech EC, Inc.
Cultural Resources Specialist

cc: Jennfier Scheffel, TtEC Project Manger
enc. Map

TETRA TECH EC, INC.

June 30, 2008

Ron Andrade, Director of LA City/County Native American Indian Commission
3175 West 6th Street, Room 403
Los Angeles, CA 90020

RE: Proposed Alta Vista Solar Site near Lancaster, California, Los Angeles County

Dear Mr. Andrade:

eSolar has secured site control and is currently in the permitting process to construct a solar test facility on private land in Southern California in 2008.

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Sincerely,

Jenna Farrell
Tetra Tech EC, Inc.
Cultural Resources Specialist

cc: Jennfier Scheffel, TtEC Project Manger
enc. Map

TETRA TECH EC, INC.

June 30, 2008

San Fernando Band of Mission Indians
John Valenzuela, Chairperson
P.O. Box 221838
Newhall, CA 91322
661-753-9833

RE: Proposed Alta Vista Solar Site near Lancaster, California, Los Angeles County

Dear Mr. Valenzuela:

eSolar has secured site control and is currently in the permitting process to construct a solar test facility on private land in Southern California in 2008.

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Tel 916.852.8300 Fax 916.852.0307
www.tteci.com

The Native American Heritage Commission provided Tetra Tech EC, Inc. with your name and address as someone who may have knowledge of heritage lands or other resources of interest within the project area. Please notify us by mail, email, phone, or fax if there are any sites or locations of specific concern within the Alta Vista project vicinity.

Please reference the "eSolar Alta Vista" in your correspondence, and send the information to my attention at Tetra Tech EC, INC. 10860 Gold Center Drive, Suite 200, Rancho Cordova, CA 95670, or fax it to (916)-852-0307, or electronically.

Please contact me at (916) 853-4575 or jenna.farrell@tteci.com if you need additional information, have questions, or would like to discuss the project. We greatly appreciate your immediate attention to this matter.

Sincerely,

Jenna Farrell
Tetra Tech EC, Inc.
Cultural Resources Specialist

cc: Jennfier Scheffel, TtEC Project Manger
enc. Map

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Cultural Resources Survey Addendum No. 1 for NRG Alpine Solar Generating Station

PREPARED FOR: NRG Solar, LLC

PREPARED BY: Aaron Fergussson/CH2M HILL, Clint Helton/CH2M HILL

DATE: June 1, 2010

Introduction

As requested by NRG, CH2M HILL conducted an environmental review to specifically address potential impacts to cultural resources for the Alpine Solar Generating Station (Project). This technical memorandum has been prepared by CH2M HILL to augment a previous study conducted by Tetra Tech EC, Inc (Budinger and Farrell, 2008) and to document the cultural resources survey of an additional 200-acre block. This Project is located approximately 0.5 mile east of the original project area and includes an east-west transmission line connection.

A field survey by Dan Ewers, M.A., RPA, and Jesse Shelmire, Cultural Resources Specialists of CH2M HILL, was conducted on April 26-27, 2010. The archaeological sensitivity of the Alpine site is considered low based on the high degree of ground disturbance from agricultural activities and the lack of any previously recorded cultural resource sites within 0.5 mile of the Project. A summary of findings for archaeological resources is presented below. Figure 1 in Appendix A depicts the area surveyed for prehistoric and historic cultural resources. Appendix B contains representative project area photographs.

The Project site is located northwest of the city of Lancaster in Los Angeles County, California, in a rural, agricultural area. The legal description of the project area is SE ¼ and the SW ¼ of the NE ¼ of Sec. 8, Township 8 North, Range 15 West, located on the Fairmont Butte, CA (1995) USGS Topographic quadrangle. The Project is located in the agricultural fields northwest of the intersection of 200th Street West and West Avenue C.

Previous Work

In 2008, Tetra Tech conducted a cultural resources inventory of a 600-acre block for a proposed solar development project in support of an Application for Certification (AFC) filed with the California Energy Commission (CEC) to construct and operate a solar power generating facility on private land (Budinger and Farrell, 2008); a complete project description and culture history of the Project area can be found in that document. Below is a brief summary of results of the original Tetra Tech survey.

On February 22 and May 22, 2008, a records search was conducted by Tetra Tech at the South Central Coastal Information Center of the California Historical Resources Information Center (CHRIS) located at California State University, Fullerton. The records search

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included the CHRIS files as well as a search of the California Points of Historical Interest, the California Historical Landmarks, the California Register of Historical Resources, the National Register of Historic Places, the California State Historic Resources Inventory, and the historic maps Neenach (1943) and Willow Springs (1943).

The original records search indicated two other small cultural resources surveys have been conducted within 1 mile of the original Project area, but neither of these previous projects are within 1 mile of the Alpine Solar Facility Project. There is a single historic archaeological site located 0.5 mile to the west but well outside the current project boundary.

Tetra Tech did not record any cultural resources within the original 600-acre Project area (Budinger and Farrell, 2008). However, they did mention two potentially historic structures—one located at the corner of West Avenue C and 220th Street West and the other being the Neenach Substation. Neither of these two potential historic resources were recorded or evaluated. However, neither of these two historic structures are located within the current Alpine Solar Facility Project conducted by CH2M HILL.

Results of Pedestrian Survey

The 200-acre Alpine project area was surveyed for cultural resources by CH2M HILL archaeologists on April 26-27, 2010. The area was surveyed by walking parallel transects spaced no more than 20 meters apart. Ground visibility ranged from poor (< 20%) to excellent (> 90%). The entire area has been disturbed through consistent agricultural use. The fields are lying fallow and the area had not been plowed prior to this survey. Consequently, weeds and other invasive vegetation had overgrown much of the Project area, resulting in poor surface visibility. One small section of the southwestern portion of the Project area could not be surveyed because of the high brush and 0 percent ground visibility; however, the remaining Project area had good enough surface visibility for a pedestrian inventory. No cultural resources were located as a result of this survey.

CH2M HILL attempted to document and evaluate the potentially historic structure at the corner of West Avenue C and 220th Street West; however, since the 2008 Tetra Tech survey the structure had been torn down. All that remained was a concrete pad, two modern storage sheds, a modern aluminum silo, and a low stone-and-brick wall around portions of the property. Nothing remains on the property to indicate the age or historic significance of the house that once occupied the lot.

Recommendations

No cultural resources have been located through standard cultural resources pedestrian inventory efforts throughout the NRG Alpine Solar Project area. The sensitivity for cultural resources in this area is considered low because of the lack of any known cultural resources in the immediate area and the high degree of surface disturbance throughout the area resulting from agricultural use.

As with any ground-disturbing project, the potential remains for accidental discovery of buried cultural resources not detected through a surface inventory or even detected through shovel testing. If cultural resources or materials are discovered during ground-disturbing activities, work in the vicinity of the discovery should cease and the area should be protected until the find can be evaluated by a qualified archaeologist. Depending on the

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nature of the find, additional consultation with the SHPO or Tribal leaders may be necessary before work can resume in the area of the find.

If human remains are encountered, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the remains are determined to be Native American, the County Coroner will notify the NAHC; the NAHC will determine and notify an MLD. The MLD may inspect the site of the discovery with permission of the landowner or his or her authorized representative. The MLD shall complete its inspection within 48 hours of its notification by the NAHC. The MLD may recommend scientific removal and analysis of human remains and items associated with Native American burials.

Reference

Budinger, Fred, and Jenna Farrell. 2008. Cultural Resource Survey of 600 acres of Land for the Alta Vista Solar Generating Station Project Site, Los Angeles County, California. Tetra Tech EC, Inc.

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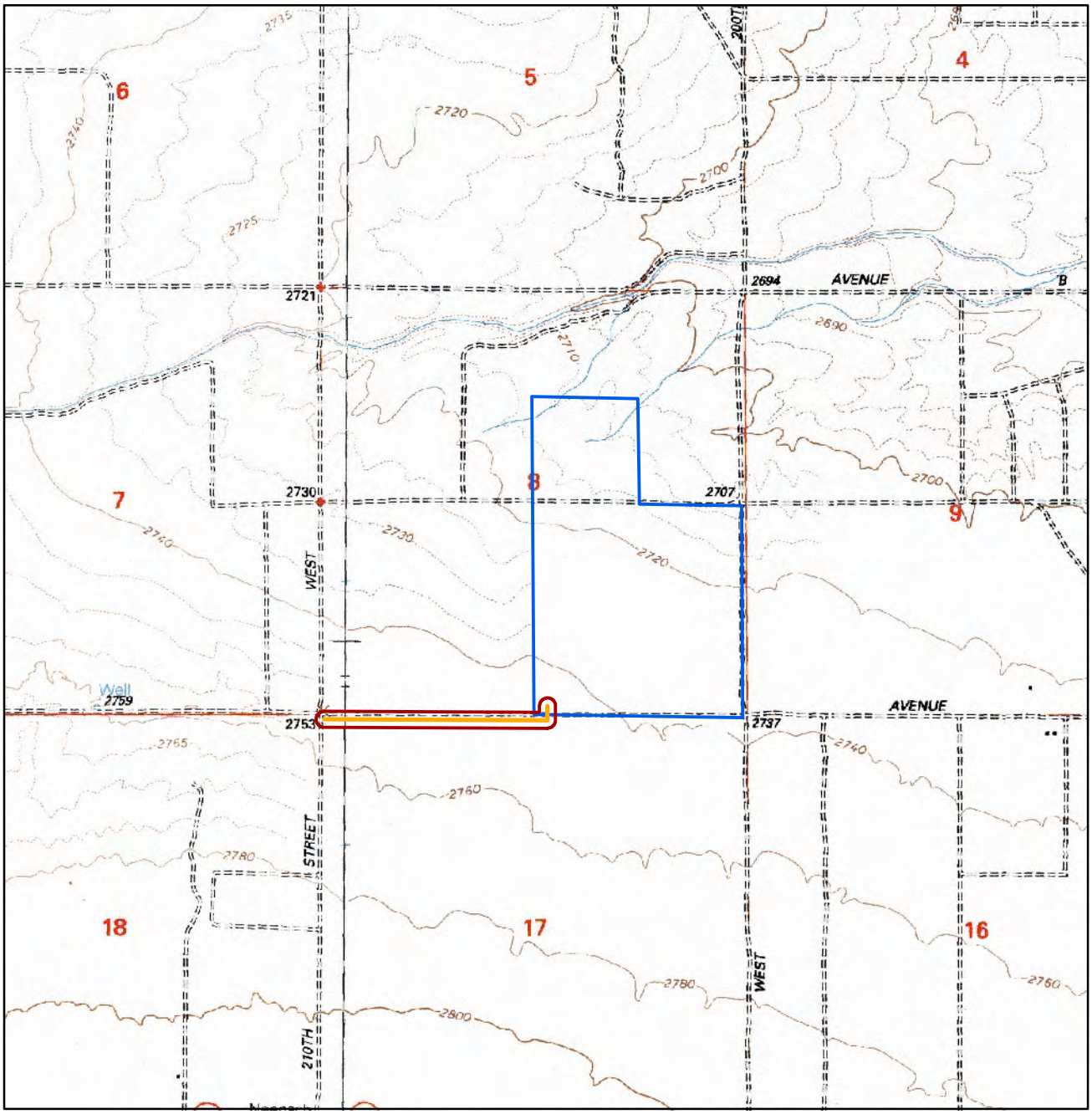
Appendix A
Map of Project Area Surveyed for Cultural Resources



LEGEND

Transmission Line

Transmission Line 100-ft buffer

Project Site

VICINITY MAP

N

0 1,000 2,000

Feet

FIGURE X
Cultural Resources Survey Area
Alpine Solar Generating Station

Appendix B
Representative Photos of Project Area

Overview of Project Area, View to the East

Overview of Section of Dense Brush and Weeds, View to the Southwest

Transmission Line Route, Looking North

Appendix J
Visual Technical Report

Visual Resources Technical Report

Alpine Solar Project

Prepared for

NRG Solar LLC

1817 Aston Avenue, Suite 104
Carlsbad, CA 92008

June 2010

CH2MHILL
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Contents

Section **Page**

1 Introduction ... 1-1

2 Project Description ... 2-1
2.1 Overview ... 2-1
2.2 Construction ... 2-2
2.3 Operation ... 2-2
2.4 Facility Closure ... 2-2

3 Methodology ... 3-1
3.1 Regulatory Framework ... 3-1
3.2 Visual Impact Analysis Approach ... 3-2
3.2.1 GIS Mapping and Viewshed Analysis ... 3-2
3.2.2 Field Visits, Selection of Key Observation Points, and Modeling ... 3-2
3.2.3 Key Observation Point Evaluation ... 3-3

4 Affected Environment ... 4-1
4.1 Regional Setting ... 4-1
4.2 Key Observation Points ... 4-2
4.2.1 KOP 1 – View from Antelope Valley Poppy Reserve ... 4-2
4.2.2 KOP 2 – View North of Arthur B. Ripley Park ... 4-3
4.2.3 KOP 3 – View from SR 138 at 200th Street ... 4-4
4.2.4 KOP 4 – View from Neenach Gas Station and Convenience Store ... 4-4
4.2.5 KOP 5 – View from Neenach Residences ... 4-5
4.2.6 KOP 6 – View from Pacific Crest Trail ... 4-6
4.3 Other Views ... 4-6

5 Visual Resources Analysis ... 5-1
5.1 Assessment of Visual Effects ... 5-1
5.1.1 KOP 1 – View from Antelope Valley Poppy Reserve ... 5-1
5.1.2 KOP 2 – View North of Arthur B. Ripley Park ... 5-1
5.1.3 KOP 3 – View from SR 138 at 200th Street ... 5-3
5.1.4 KOP 4 – View from Neenach Gas Station and Convenience Store ... 5-3
5.1.5 KOP 5 – View from Neenach Residences ... 5-4
5.1.6 KOP 6 – View from Pacific Crest Trail ... 5-5
5.2 Impact Significance ... 5-6
5.2.1 CEQA ... 5-6
5.2.2 Los Angeles County Initial Study ... 5-8
5.3 Cumulative Impacts ... 5-10

6 Mitigation Measures ... 6-1

7 References ... 7-1

Table

1 Landscape Scenic Quality Scale

Figures

1 Key Observation Points
2 KOP 1 View from Antelope Valley Poppy Reserve
3 KOP 2 View from North of Arthur B. Ripley Park
4 KOP 3 View from SR 138 at 200th Street
5 KOP 4 View from Neenach Gas Station and Convenience Store
6 KOP 5 View from Neenach Residences
7 KOP 6 View from Pacific Crest Trail
8 Other View 1 View from within Arthur B. Ripley Park

SECTION 1

Introduction

NRG Solar Alpine LLC (the "Applicant") proposes to construct, own, and operate a renewable energy project providing electricity generated from clean solar technology. The Alpine Solar Project ("ASP" or "Project") will consist of a nominal 92-megawatt (MW) AC solar photovoltaic (PV) generating facility located on approximately 580 acres of developable area of the approximately 800-acre Project site.

This technical report evaluates the potential visual impacts of the Project and has been prepared in support of the Applicant's Mitigated Negative Declaration evaluating the impacts of the Project. A systematic evaluation was made of existing visual conditions in the Project vicinity and of the impacts that the Project would have on the public's experience of the region's aesthetic qualities.

This report is organized into the following sections:

- Section 1. Introduction
- Section 2. Project Description
- Section 3. Methodology
- Section 4. Affected Environment
- Section 5. Visual Resources Analysis
- Section 6. Mitigation Measures
- Section 7. References

Figures are provided at the end of this report.

SECTION 2

Project Description

2.1 Overview

The Project will consist of a nominal 92-MW AC solar PV generating facility located on approximately 580 acres of developable area of the approximately 800-acre Project site. The Project site includes two distinct areas, defined for the purpose of this Application as the Western Parcel (approximately 600 acres) and the Eastern Parcel (approximately 200 acres).

The power generated by the Project will be delivered to the California Independent System Operator (CAISO) grid by constructing a new, one-mile-long, 66-kilovolt (kV) generation tie-line to the Neenach Substation, which is owned and operated by Southern California Edison (SCE). The 66-kV transmission line for the Project will be located adjacent to 210th Street West, which is currently an unpaved road, and will extend from the Project site to the Neenach Substation.

Several types of commercially proven PV modules are being considered for the Project, including silicon-based systems, thin film, and amorphous silicon. Manufacturers of these PV modules include SunPower, First Solar, Sharp, and others. The modules will be connected to power inverters for converting direct current (DC) into alternating current (AC) power. Multiple step-up transformers in the PV field will deliver power to the plant step-up transformers, which will then export the power to the point of interconnection at the utility's substation.

Depending on the selected manufacturer, the modules will be mounted on either single-axis tracking structures or fixed-tilt structures that could be up to 8 feet tall. The modules will be grouped in nominal 1 MW AC arrays that will face due south to maximize the amount of incident solar radiation absorbed over the year. Single-axis trackers would rotate up to 180° along an east-west axis. Structural support elements will be constructed of corrosion-resistant, galvanized steel members that are attached to driven circular piers or I-beam posts.

The Project building will include an operations and maintenance (O&M) building, which will be approximately 30 feet by 15 feet (450 square feet) and will be a single-story pre-engineered structure not exceeding 15 feet in height. Building columns will be supported on reinforced concrete mat foundations or individual spread footings. The ground floor will consist of reinforced concrete slabs. A number of permanent onsite parking spaces will be provided for employees, visitors, maintenance crews, and equipment, according to Los Angeles County standards. The Project site will be fenced with a 6-foot-high chain-link security fence topped with barbed wire. Each of the fenced areas will include at least two gates, and a secured controlled main access gate will be located at the entrance of each area.

Access to the Project site will be from SR 138 (West Avenue D) via 210th Street West and along West Avenue C. The Project will realign and improve 210th Street West and West Avenue C to the entrance of the facility as a 20-foot-wide all-weather road shown on the Site Plan. The proposed access road from the entrance to the proposed O&M building

will be an all-weather surface. For dust control, the service and site perimeter roads will be treated with a dust palliative compacted over native soils.

The Project 66-kV generation tie-lines will be suspended by either wood or steel poles with post insulators. The stronger steel poles permit span lengths of about 600 feet, while the slightly shorter wood poles have span lengths of about 300 feet.

2.2 Construction

Construction of the proposed Project, beginning with site preparation and grading through equipment setup and commencement of commercial operation, is expected to last approximately 12 to 18 months. Project construction will consist of three major phases: 1) site preparation, which includes clearing/grading, 2) PV system installation and testing, and 3) site cleanup/restoration.

Staging areas will be established during construction that include construction offices, a first aid station and other temporary buildings, worker parking, truck loading and unloading facilities, and an area for assembling the PV support structures.

The PV modules require a moderately flat surface for installation. Some earthwork, including grading, fill, compaction, and erosion control cultivation may be required to accommodate the placement of PV arrays, concrete for foundations, access roads, and drainage features.

Construction will generally occur during daylight hours from Monday through Friday. Weekend and non-daylight work hours may be necessary to make up schedule deficiencies or to complete critical construction activities. For instance, during hot weather, it may be necessary to start work earlier to avoid pouring concrete during high ambient temperatures.

2.3 Operation

Once placed into service, the proposed Project will typically be operated on an unstaffed basis and will be monitored remotely with regular onsite personnel visitations for security, maintenance, and system monitoring. Therefore, there will be no full-time site personnel onsite during operation.

The lighting system will provide operations and maintenance personnel with illumination in both normal and emergency conditions. Lighting will be designed to provide the minimum illumination needed to achieve safety and security objectives and will be shielded and oriented to focus illumination on the desired areas, minimizing light spillover.

2.4 Facility Closure

The planned operational life of the facility is 30 years. However, if the facility continues to be economically viable, it could be operated for a longer period. Procedures set forth in a decommissioning plan will be implemented.

SECTION 3

Methodology

3.1 Regulatory Framework

This technical report evaluates the potential visual impacts of the Project and has been prepared in support of the Mitigated Negative Declaration for submittal to Los Angeles County Department of Regional Planning. The County will evaluate the Project's visual impacts in light of the requirements of the California Environmental Quality Act (CEQA) and the environmental reporting procedures of the County of Los Angeles.

The CEQA Guidelines define a "significant effect" on the environment to mean a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including… objects of historic or aesthetic significance" (California Code of Regulations [CCR], Title 14 §15382).

Appendix G of the CEQA Guidelines, under Aesthetics, lists the following four questions to be addressed regarding whether the potential impacts of a project are significant. These questions are addressed in Section 5.2:

- Would the project have a substantial adverse effect on a scenic vista?
- Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State Scenic Highway?
- Would the project substantially degrade the existing visual character or quality of the site and its surroundings?
- Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

In addition to the CEQA questions above, in its environmental reporting procedures, Los Angeles County asks the following questions:

- Is the project site substantially visible from or will it obstruct views along a scenic highway (as shown on the Scenic Highway Element), or is it located within a scenic corridor or will it otherwise impact the viewshed?
- Is the project substantially visible from a regional riding or hiking trail?
- Is the project site located in an undeveloped or undisturbed area that contains unique aesthetic features?
- Is the proposed use out-of-character in comparison to adjacent uses because of height, bulk, or other features?
- Is the project likely to create substantial sun shadow, light or glare problems?
- Other factors (e.g., grading or landform alteration)?

3.2 Visual Impact Analysis Approach

3.2.1 GIS Mapping and Viewshed Analysis

Prior to conducting field work, CH2M HILL plotted the Project features on topographic maps using Arc Info GIS. These maps were overlain with the locations of communities, travel routes, preservation areas, historic landmarks, and recreation areas (for example, parks and trails). CH2M HILL next conducted a viewshed analysis to determine the areas from which Project features could be visible. The analysis extended 10 miles from the Project site in every direction. This represents a conservative approach to capture all sensitive viewpoints from which the project would be visible. Because of the significant height differences in the Project features, the viewshed analysis indicates areas from which all project features have the potential to be seen, areas from which only the transmission poles have the potential to be seen, and areas from which no Project features have the potential to be seen. In addition, although this analysis considers the extent to which topography would block views of the turbines, it does not take into account the extent to which buildings and vegetation would also block views. Analysis of these sites relative to the Project area allowed a preliminary assessment of visual impacts associated with the Project.

Using the viewshed analysis, typical, sensitive, close-up, and distant views that a viewer would have of the Project site were identified. These viewpoints encompassed the following areas:

- Communities: Neenach
- Parks and Trails: Antelope Valley California Poppy Reserve, Arthur B. Ripley Desert Woodland State Park, Pacific Crest National Scenic Trail
- Travel Corridors: SR 138

3.2.2 Field Visits, Selection of Key Observation Points, and Modeling

On May 3, 2010, and May 13 and 14, 2010, CH2M HILL's visual resource specialists conducted site visits to the potentially sensitive locations, documented these locales via photographs, and recorded global positioning system (GPS) points. All photographs were taken with a single lens reflex digital camera set to take photographs that are the equivalent of photos taken with a 35-millimeter (mm) camera with the lens set at a 50-mm focal length.

Based on the viewshed analysis and observations made during the field visit, six Key Observation Points (KOPs) were selected to represent a range of views toward the Project site from or near local communities, recreational use areas, and major travel corridors. Section 4 of this report discusses in detail the selected KOPs as part of the affected environment.

For each KOP, CH2M HILL prepared a visual simulation using computer modeling techniques to depict the view as it would appear with the Project completed. A combination of computer-aided drafting, GIS, and rendering programs was used to produce the images of Project facilities that are superimposed on photographs. To produce the simulations, a digital site model was created using topographic and site data. Next, three-dimensional (3-D) models of Project features were prepared using Project plans, and these were superimposed on the digital site model. For each KOP, viewer location was digitized from

topographic maps using 1.5 meters (5 feet) as the assumed eye level. Computer "wire frame" perspective plots were overlaid on the photographs of the KOPs from the simulation viewpoints to verify scale and viewpoint location. Digital visual-simulation images were produced based on renderings of the 3-D model combined with the high-resolution digital base photographs.

Of the various models of solar PV technology under consideration for this Project, the technology chosen for simulation was the one that would represent the most conservative (worst-case) scenario for potential visual impacts. The technology selected for simulation is of the maximum height—9 feet—of the models under consideration. Simulations assume use of modules with the greatest amount of potential reflectivity at times of the day when reflectivity would be the highest because of sun angle. The simulations also assume the use of steel rather than wooden poles for the transmission lines. Using the conservative assessment approach accomplishes several objectives:

- First, it facilitates comprehensive analysis in a streamlined way by considering the greatest level of impact that could occur, thus also encompassing all lesser impacts that could occur with the use of other solar PV technology.
- Second, using a single worst-case scenario avoids separate assessment of each technology when the differences among them are minimal relative to visual impacts.
- Third, it presents the reader and reviewer with focused visual simulations of multiple KOPs that consider the worst-case visual scenario.

3.2.3 Key Observation Point Evaluation

To assess the existing visual quality of the views from the KOPs and to establish the degree to which the Project would alter visual quality levels, CH2MHILL rated the images using a scale summarized in Table 1. This scale builds on and incorporates landscape assessment concepts applied by the U.S. Forest Service, the U.S. Department of Transportation, and Buhyoff (Buhyoff et al., 1994).

In rating the levels of scenic quality of the KOPs, a broad spectrum of factors was taken into consideration, including:

- Natural features, including topography, water courses, rock outcrops, and natural vegetation
- Positive and negative effects of cultural alterations and built structures on visual quality
- Visual composition, including an assessment of the vividness, intactness, and unity of patterns in the landscape[1]

[1] Vividness is the memorability of landscape elements. Intactness is the integrity of visual order in the natural and built landscape and the extent to which the landscape is free from visual encroachment. Unity is the degree to which the visual resources of the landscape join to form a coherent, harmonious visual pattern. Unity refers to the compositional harmony of compatibility between landscape elements (US DOT, 1988).

TABLE 1
Landscape Scenic Quality Scale

Rating	Explanation
Outstanding Visual Quality	Landscapes of exceptionally high visual quality that are significant nationally or regionally, usually containing exceptional natural or cultural features. They are what we think of as “picture post card” landscapes. People are attracted to these landscapes to view them.
High Visual Quality	Landscapes that have high quality scenic value. This may be a result of cultural or natural features that cause the landscape to be visually interesting or particularly comfortable. These landscapes have high levels of vividness, unity, and intactness.
Moderately High Visual Quality	Landscapes that have above-average scenic value but are not of high scenic value. Levels of vividness, unity, and intactness are moderate to high.
Moderate Visual Quality	Landscapes that are common or typical with average scenic value. They usually lack significant cultural or natural features. Levels of vividness, unity, and intactness are average.
Moderately Low Visual Quality	Landscapes that have below-average scenic value but not low scenic value. They may contain visually discordant man-made alterations, but these features do not dominate the landscape. They often lack spaces that people will perceive as inviting and provide little interest in terms of two-dimensional visual attributes of the landscape.
Low Visual Quality	Landscapes that have below-average scenic value. They may contain visually discordant man-made alterations. Levels of vividness, unity, and intactness are below average.

Note:

Rating scale based on Buhyoff, 1994; US DOT, 1988; and USDA, 1995.

SECTION 4

Affected Environment

4.1 Regional Setting

The Project is located in the Antelope Valley, the westernmost portion of the Mojave Desert characterized by an expansive arid landscape and long distance views. The Antelope Valley is a triangular-shaped basin with the San Gabriel Mountains to the south and southwest and the Tehachapi Mountains to the north and northwest. The main urban centers—Palmdale, Lancaster, and Rosamond—are located in the central Antelope Valley along the north-south SR 14 corridor. The main transportation corridor in the Project vicinity is SR 138 (Avenue D), which connects SR 14 and the Palmdale and Lancaster areas with I-5.

The Project site is on the relatively rural western end of the Antelope Valley that consists primarily of rural residences, farmlands, and undeveloped areas. The Project site is approximately 20 miles west-northwest of Lancaster and is approximately 12 miles west of the community of Rosamond. It is approximately 3 miles east of the rural community of Neenach, which has about 800 residents (Los Angeles County, 2010) and is 1 mile north of SR 138.

Land use at the Project site includes active or temporarily fallow cropland, former cropland that has been recolonized by shrubby vegetation, and undeveloped areas. The majority of lands immediately adjacent to the Project site are fields that were croplands but have been recolonized by Mojave Desert vegetation, most notably rabbit brush. The exceptions to this are active farmlands adjacent to the northwestern corner of the Western Parcel and a Significant Ecological Area (SEA) adjacent to the eastern side of the Eastern Parcel and 0.25 mile south of the Western Parcel. SEAs are ecologically important systems often integral to the preservation of threatened or endangered species and the conservation of biological diversity in the County. The Project is adjacent to a portion of SEA #60, the Joshua Tree Woodland SEA system. These SEA parcels are densely vegetated and block views from the adjacent roadways.

Along with the Project, a transmission line is proposed along 210th Street West between the Project site and the Southern California Edison (SCE) Neenach substation on SR 138. The existing 210th Street West is a dirt road that passes adjacent to former cropland and a portion of the Joshua tree woodland SEA. Other transmission lines exist in the Project vicinity, including a wood pole line along the north side of SR 138.

Recreational facilities in the Project vicinity include regional, state, and national parks and trails such as the Antelope Valley California Poppy Reserve, Arthur B. Ripley Desert Woodland State Park, Los Angeles County Desert Pines Wildlife Sanctuary, and the Pacific Crest National Scenic Trail (PCT). No neighborhood parks exist near the Project.

The Antelope Valley California Poppy Reserve (Poppy Reserve) is located on the Antelope Buttes approximately 7 miles southeast of the Project site. The Poppy Reserve is open year round but attracts most visitors from mid-February through mid-May for its wildflower

displays. The Poppy Reserve has several miles of trails, an interpretive center, and five designated vista points.

The 560-acre Arthur B. Ripley Desert Woodland State Park is located two miles south of the Project site. The Arthur B. Ripley Park offers visitors a self-guided interpretive trail in Joshua tree habitat. In the spring, the park also offers wildflower displays. Los Angeles County Desert Pines Wildlife Sanctuary, approximately 4 miles south of the Project site, is also open to the public but has no established trails.

The PCT is a national hiking trail that crosses the Antelope Valley near the Project site and traverses the west coast of the United States from Canada to Mexico, crossing California, Oregon, and Washington. The PCT descends from the Tehachapi Mountain Range north-northeast of the Project site, crosses the Antelope Valley, and ascends into the San Gabriel Mountain Range southwest of the Project site. At its closest points, the PCT is approximately 6 miles south, 4 miles east, and 3.5 miles north of the Project site.

No State-designated, State-eligible, County-designated, or County-eligible scenic highways have views of the Project area.

4.2 Key Observation Points

Based on the viewshed analysis and observations made during the field visit, six KOPs were selected for analysis in this report. These six KOPs represent a broad range of views toward the site from or near communities in the region, recreational use areas, and major travel corridors. The images of each KOP are presented as Photo A in Figures 2 through 7.

4.2.1 KOP 1 – View from Antelope Valley Poppy Reserve

KOP 1 (Figure 2) is a view from the Antelope Valley California Poppy Reserve (Poppy Reserve), approximately 7 miles southeast of the Project site. KOP 1 was taken from the Kitanemuk Vista Point and represents the designated vista point within the Poppy Reserve from which the Project site would be most visible. Most other views toward the Project site from the Poppy Reserve would be blocked by intervening hills (see Figure 1).

KOP 1 represents the view from the Kitanemuk Vista Point toward the western Antelope Valley and the Project site. The duration of this view is likely to be moderate, representing the amount of time a visitor would spend at this vista point before resuming a hike. The vista point is equipped with benches where visitors can rest and look at the view. Sensitivity to this view is likely to be high because visitors come to the Poppy Reserve expecting scenic views; this vista point represents a destination point for some visitors.

KOP 1 presents a long-range view across the Antelope Valley toward the Tehachapi Mountains. The foreground consists of grassy slopes covered in the spring with wildflowers—in particular the California poppy. In the distance are rural residences, farmland, and undeveloped lands of the valley floor. The most prominent features of the valley floor are stands of trees, most of which consist of native Joshua trees and junipers that appear as dark, linear features against the lighter shades of surrounding fields. A few rural residences and farm buildings are visible. Other buildings are only partially visible or are not visible because of the distance or screening by intervening trees.

Applying the scale presented in Table 1, this view can be rated as having a high level of visual quality. The vividness of the view is very high because the panorama of the western Antelope Valley framed by profuse wildflowers is memorable. The intactness of the view is moderately high. Though many built elements such as structures and roads are visible, they are not too noticeable because of distance and screening by vegetation. The unity of the view is high because of the harmonious composition of a valley framed by hills.

The view's character is one of a naturalistic Mojave Desert landscape with agricultural elements on the valley floor.

4.2.2 KOP 2 – View North of Arthur B. Ripley Park

KOP 2 (Figure 3) is a view from the northern edge of Arthur B. Ripley Desert Woodland State Park at the intersection of 210th Street West and Lancaster Road, 2 miles south of the Project site. KOP 2 represents the view that Arthur B. Ripley Park visitors would see as they exit the park to the north. KOP 2 also serves as a worst-case scenario for the Desert Pines Wildlife Sanctuary, which is located south of Arthur B. Ripley Park. This view would not be visible from within Arthur B. Ripley Park because the park vegetation blocks views to the outside (see Section 4.3).

KOP 2 is a view of moderate duration that lasts for 1 mile along 210th Street from Lancaster Road to SR 138. After a motorist turns right or left onto SR 138, the view toward the Project site would be a side view and would not be within the motorist's primary cone of vision.

In KOP 2, a patchwork of cropland and undeveloped land can be seen against the backdrop of the Tehachapi Mountains. The foreground is a view of 210th Street flanked by former cropland that has been recolonized by Mojave desert vegetation, most notably rabbit brush. Much of the valley lands within view were similarly cleared for agriculture at some point. Some of these fields are currently being cultivated and others are no longer in use. The band of vegetation in the middleground on the left side of the view is a portion of the Joshua Tree Woodland SEA. The line of trees in the middleground on the right side of the image is a planted windbreak. The fields in the foreground and middleground and into the Tehachapi Mountains in the background give way to hills covered with Mojave desert vegetation.

Several structures are somewhat visible from KOP 2. A line of wooden transmission poles and the Neenach Substation along SR 138 are noticeable but do not attract the viewer's attention. Scattered rural residences and other buildings are barely visible in the distance on the far left and right sides of the view.

Applying the scale presented in Table 1, the view from KOP 2 can be rated as having a moderately high level of visual quality. The vividness of the view is moderately high because, although the foreground has a typical view of farmland in the western Antelope Valley, the mountain backdrop is dramatic. The intactness of the view is moderately high because the few visible structures do not attract attention. The unity of the view is moderate because composition of the view, including the patchwork of land uses in the foreground, does not add up to a coherent whole.

The character of the view is rural and agricultural.

4.2.3 KOP 3 – View from SR 138 at 200th Street

KOP 3 (Figure 4) is a view from SR 138 looking northwest, approximately 1 mile from the Project site. This image is a panorama composed of two 50-mm images. The panorama was necessary because the viewpoint is so close to the site that all Project facilities would not be visible in a single-frame image.

This view is representative of the view looking northwest from vehicles traveling west on SR 138. Duration of the view would be short because motorists travel at high speeds on SR 138. In addition, a motorist's view would be represented only from 190th Street to 210th Street. KOP 3 would not be visible to the motorist prior to reaching 190th Street because the view would be blocked by the Joshua Tree Woodland SEA on the north side of SR 138 between 180th and 190th Streets. KOP 3 represents an oblique view rather than a forward view and would be at the outer edge of a driver's primary cone of vision.

Sensitivity to the view from KOP 3 would vary. Some KOP 3 viewers would be motorists traveling somewhat long distances from the Palmdale/Lancaster area or further east toward I-5. They are not likely to be sensitive to the view from KOP 3, which would be a small part of a much longer drive. Other motorists would be western Antelope Valley residents. These residents are likely to use SR 138 frequently and are likely to be more sensitive to the view.

KOP 3 is an expansive northward view of the Antelope Valley framed by the Tehachapi Mountains. The dirt road in the foreground is 200th Street. Beyond the road, former agricultural fields are being recolonized by Mojave desert vegetation. Similar fields extend northward toward the Tehachapi foothills. A line of trees in the middleground represents a wind break. Structures that include rural residences are barely visible in the far right and left corners of the view. The Tehachapi foothills and peaks are visible in the distance.

Applying the scale presented in Table 1, this view can be rated as having a moderately high level of visual quality. The vividness of the view is moderately high because of the mountain backdrop. The intactness of the view is moderately high since the view is of Antelope Valley farmland and undeveloped land with few or no encroaching elements. The unity of the view is also moderately high because the Mojave Desert vegetation in the foreground framed by the Tehachapi Mountains in the background forms a harmonious composition.

The character of the view is primarily undeveloped and agricultural.

4.2.4 KOP 4 – View from Neenach Gas Station and Convenience Store

KOP 4 (Figure 5) is a view from the western entrance of the gas station and convenience store parking lot at SR 138 and 230th Street, located 1.3 miles from the Project site. The gas station and convenience store is one of the only commercial establishments in Neenach and may be considered a community gathering place. This view is also representative of that of eastbound motorists on SR 138.

KOP 4 represents a view of people who frequent the gas station and convenience store. Since this would be a potentially frequent view, local residents would likely be at least moderately sensitive to the view from KOP 4.

KOP 4 also represents the view of eastbound motorists along SR 138. This would be a short duration view because motorists travel at high rates of speed along SR 138. In addition, KOP 4 represents an oblique view to the northeast rather than a forward view, and it would be at the edge of a driver's primary cone of vision. Some KOP 4 viewers would be motorists traveling somewhat long distances from I-5 toward the Palmdale/Lancaster area. They are not likely to be sensitive to the view from KOP 4, which would represent a view that is part of a much longer drive. Other motorists would be western Antelope Valley residents. These residents are likely to use SR 138 frequently and are likely to be more sensitive to the view.

KOP 4 has a foreground and middleground view of fields and horse pastures crossed by fences and a wooden pole transmission line. Scattered residences and other buildings are barely visible in the middleground and background. The valley floor grades into the Tehachapi Mountains on the left side of the view and the Rosamond Mountains on the right, which are connected by a long alluvial fan.

Applying the scale presented in Table 1, this view can be rated as having a moderate level of visual quality. The vividness of the view is moderate because this is a typical view of western Antelope Valley farmland. The intactness of the view is moderate because the wooden pole transmission line can be seen as an encroaching element. The unity of the view is also moderate because the compositional harmony of the view is average.

The character of the view is rural and agricultural.

4.2.5 KOP 5 – View from Neenach Residences

KOP 5 (Figure 6) is a view from 230th Street at C Street, 1 mile west of the Project site. KOP 5 is representative of views from some of the closest residences to the Project site and represents a worst-case scenario for the community of Neenach. KOP 5 represents the perspective of residents going to and from their homes on 230th Street and may be the view from yards or from east-facing windows at a limited number of houses along the east side of 230th Street. These views would potentially be frequent and of moderate to long term in duration. Residents are assumed to be highly sensitive to the views from and around their homes.

KOP 5 is a view of fields that extend to a line of trees in the distance. A wood pole electric line crosses the view from the foreground to the background. On the left side of the view, ornamental trees and a fence line associated with the neighboring residential property are visible. In the center of the view is a tin building. The line of trees in the distance marks both the edge of the Joshua Tree Woodland SEA located north of SR 138 at 210 Street West and a line of trees planted as a windbreak. The flat horizon line is broken on the left side of the view by the Rosamond Mountains and on the right side by Fairmont Butte.

Applying the scale presented in Table 1, this view can be rated as having a moderate level of visual quality. The vividness of the view is moderate because this is a typical view of western Antelope Valley farmland. The intactness of the view is moderate since the wooden pole transmission line can be seen as an encroaching element. The unity of the view is also moderate because the compositional harmony of the view is average.

The character of the view is rural and agricultural.

4.2.6 KOP 6 – View from Pacific Crest Trail

KOP 6 (Figure 7) is a view from the Pacific Crest National Scenic Trail (PCT) looking south, 3.6 miles from the Project site. The PCT is a 2,650-mile hiking trail from Mexico to Canada that passes through California, Oregon, and Washington. The PCT passes near the Project site on three sides. A its closest points, the PCT is approximately 6 miles south of the Project site, 4 miles east, and 3.5 miles north. KOP 6 represents hikers' views on the PCT. These views are likely to be of moderate to long duration. Hikers are likely to be very sensitive to views from the PCT because they expect it to offer scenic views.

This view was chosen because views toward the Project site from the southern and eastern portions of the PCT in the Project vicinity would be blocked by topography, vegetation, and structures. The Project site would be visible from portions of the PCT to the north.

KOP 6 presents an expansive south-facing view of the Antelope Valley with the San Gabriel Mountains in the background. In the foreground are the foothills of the Tehachapi Mountains, which slope toward the valley floor. They are covered with shrubs such as rabbit brush and creosote bush. The orange color on the left side of the view is a concentration of spring California poppy blooms for which the Antelope Valley is well known. In the middleground, the characteristic fields of the Antelope Valley floor are visible and interspersed with dark green areas that represent undeveloped lands, including Joshua Tree Woodland SEA and the Arthur B. Ripley State Park. The background of KOP 6 is formed by the northern face of the San Gabriel Mountains.

Applying the scale presented in Table 1, this view can be rated as having a moderately high level of visual quality. The vividness of the view is moderately high because it represents an expansive view of the western Antelope Valley. The intactness of the view is moderately high because encroaching elements are not visible. The unity of the view is moderately high because of its harmonious composition of an expansive view of a valley framed by hills.

The character of the view is one of a naturalistic Mojave Desert landscape with agricultural elements on the valley floor.

4.3 Other Views

The Arthur B. Ripley Desert Woodland State Park was identified as a visually sensitive site and as a candidate for a KOP because the viewshed analysis indicated that the Project would potentially be visible from the park. However, the viewshed analysis takes topography into account in determining project visibility but does not factor in other obstructions such as structures and vegetation. Fieldwork revealed that structures or vegetation blocked potential views of the Project site from these locations; therefore, they were eliminated from consideration as KOPs.

Character Photo 1 (Figure 8) is a view from the trailhead in Arthur B. Ripley Park about 2.25 miles south of the Project site. Because of the relatively dense tree coverage in the park, the Project site is not visible from the trailhead, nor would it be from the majority of the publicly accessible points within the park.

SECTION 5

Visual Resources Analysis

This section analyzes the visual resources impacts of the proposed Project in accordance with the methods outlined in Section 3 of this report. The KOPs described in Section 4 and Figures 2 through 7 provide the baseline against which the impacts of the Project area are evaluated. Figures 2 through 7 provide simulations of each view as it would appear during the Project's operational phase. The Project's visual impacts are analyzed according to CEQA Significance Criteria.

5.1 Assessment of Visual Effects

5.1.1 KOP 1 – View from Antelope Valley Poppy Reserve

Figure 2 presents a photo of the existing view toward the Project site from the Antelope Valley California Poppy Reserve (Poppy Reserve) (Photo A) approximately 7 miles southeast of the Project site and a simulation of the view as it would appear during the Project's operational period (Photo B). Comparison of the images indicates that when the Project is in place, neither the quality nor character of the view would change substantially.

From KOP 1, Project structures would be visible as a horizontal feature on the far side of the valley near the base of the Tehachapi Mountains. Project structures are not distinguishable and blend in with other features on the valley floor that appear to have a similar horizontal character from this distance. At times of the day when the solar modules are reflective such as pictured in Photo B, Project features would create a "lake effect" and would have a silvery, bluish cast that would blend in with the silvery-green of surrounding fields. At other times of the day, the Project would appear dark and would not be readily distinguishable from the stands of trees on undeveloped lands, which also form dark lines on the valley floor near the Project site. Because the Project features may be noticeable but would not be visible enough to attract the attention of the casual observer, Project features would not substantially change the character or quality of the view.

As is discussed in Section 4.2.1, KOP 1 represents the view of a Poppy Reserve visitor at Kitanemuk vista point. The length of the view would be of moderate duration depending on the amount of time a visitor stops at the vista point before resuming a hike. The majority of KOP 1 viewers would be local and regional visitors to the Poppy Reserve during wildflower season; these viewers are likely to be highly sensitive to the view.

5.1.2 KOP 2 – View North of Arthur B. Ripley Park

Figure 3 presents a photo of the existing view toward the Project site from the north edge of Arthur B. Ripley Desert Woodland State Park at the intersection of 210th Street West and Lancaster Road, 2 miles south of the Project site (Photo A). Figure 3 also presents a simulation of the view as it would appear during the Project's operational period (Photo B). Comparison of the existing view with the post-Project image indicates that the Project would somewhat alter the character of the view but would not substantially degrade the character or quality of the view.

From KOP 2, the Project solar structures would be visible as geometric forms on the former cropland on which they would be located. The visible structures of the Project include the O&M building, solar collector structures, inverter boxes, and transmission lines. Though the surrounding landscape consists primarily of naturally curving lines of the valley floor and Tehachapi Mountains, linear and geometric elements were already present. These elements include roads, parcel boundaries, lines of trees planted as windbreaks, and existing transmission lines. Therefore, the Project's linear and geometric forms would not be totally new features on the landscape. Existing transmission poles associated with Neenach substation and the transmission line along SR 138 are vertical elements similar to those of the new transmission poles.

As is evident in KOP 2, Photo B, the Project features would occupy a significant portion of the middleground of the view. However, the majority of the structures are relatively low and do not block views of any landscape features. At times of the day when the solar modules are reflective, such as pictured in Photo B, Project features would create a "lake effect" and would have a silvery, bluish cast that would blend in to some extent with the silvery-green of surrounding fields. At other times of the day, Project features would appear to be darker and would contrast with the fields; however, the features would blend in relatively well with existing stands of trees and patches of darker vegetation throughout the valley and foothills. Although the Project is likely to attract attention from KOP 2, the view would continue to be dominated by the Tehachapi Mountains in the background.

The presence of the Project is likely to somewhat alter the character of the view from KOP 2 because solar infrastructure is a new feature in a landscape that is primarily farmland and undeveloped land. However, the change in character would not rise to the level of substantial degradation because the Project features are low and do not block views across the valley. In addition, the form of the Project features relates visually to existing land uses because rows of solar panels mimic the form of row crops in the area. The geometric form of the solar field and rows of panels is similar to the geometric and linear forms of existing elements such as roads, parcel boundaries, lines of trees planted as windbreaks, and existing transmission lines.

With Project features in place, the level of visual quality of the view from KOP 2 would not substantially change. The vividness of the view would likely remain at moderately high because a solar field would likely be a distinctive and memorable element in this setting. Intactness would decrease from moderately high to moderate, and unity would decrease from moderate to moderately low. This is because the presence of the solar field in the midst of farmland could be perceived as a visual intrusion. Overall, visual quality would change from moderately high to moderate. This does not represent a substantial change.

As is discussed in Section 4.2, the view from KOP 2 would be that of a visitor to Arthur B. Ripley Park exiting the park to the north. This view would not be visible from inside Arthur B. Ripley Park because vegetation would block views within the park toward the Project site (see Section 4.3). This view would be of moderate duration and would last for 1 mile along 210th Street to the intersection with SR 138. After a motorist turns right or left onto SR 138, the view toward the Project site would be a side view and would not be within the motorist's primary cone of vision.

5.1.3 KOP 3 – View from SR 138 at 200th Street

KOP 3 (Figure 4) is a view from SR 138 looking northwest (Photo A) approximately 1 mile from the Project site and is a simulation of the view as it would appear during the Project's operational period (Photo B). Comparison of the existing view with the post-Project image indicates that when the Project is in place, the change to the view character and quality of the view would not be substantial.

From KOP 3, Project features are visible but do not dominate the view. From this viewing angle and distance, Project features appear as long, linear forms in the middleground at the base of the Tehachapi foothills. Project features are not readily distinguishable as solar infrastructure and the rows of solar panels are not evident. Project features are relatively distant from the viewer and do not block views across the valley. Because of their low profile and distance, Project features tend to blend into the landscape. At times of the day when the solar modules are reflective, such as pictured in Photo B, Project features would create a "lake effect" and would have a silvery, bluish cast that would blend in to some extent with the silvery-green of surrounding fields. At other times, Project features would appear to be darker and would contrast with the fields but would blend in relatively well with existing stands of trees and patches of darker vegetation throughout the valley and foothills.

The presence of the Project would not significantly alter the character of the existing view because Project features are relatively distant, are not readily distinguishable as solar infrastructure, and do not block views across the valley. With Project features in place, the level of visual quality of the view from KOP 3 would not change substantially. The vividness of the view would likely remain moderately high because the Project would not be readily distinguishable as a solar field. Intactness and unity would decrease from moderately high to moderate because Project infrastructure could be seen as an encroaching element in a view otherwise free of built elements. Overall, the level of visual quality would change from moderately high to moderate. This does not represent a substantial change.

As discussed in Section 4.2, this view is representative of the view looking northwest from vehicles traveling west on SR 138. The duration of the view would be short because motorists travel at high speeds on SR 138. In addition, it would represent a motorist's view only from 190th Street to 210th Street. KOP 3 would not be visible to the motorist prior to reaching 190th Street because the view would be blocked by the Joshua Tree Woodland SEA located between 180th and 190th Streets on the north side of SR 138. KOP 3 represents an oblique view rather than a forward view and would be at the outer edge of a driver's primary cone of vision.

5.1.4 KOP 4 – View from Neenach Gas Station and Convenience Store

Figure 5 presents a photo of the existing view toward the Project site from the west entrance of the gas station and convenience store parking lot at SR 138 and 230th Street (Photo A) approximately 1.3 miles southwest of the Project site. Figure 5 also presents a simulation of the view as it would appear during the Project's operational period (Photo B). Comparison of the existing image with the post-Project image indicates that when the Project is in place, change to the character and quality of the view would not be substantial.

In KOP 4, Project features are visible in the middleground as a low strip at the base of the alluvial fan extending from the Tehachapi Mountains. Because of their low profile, Project features would be noticeable but would tend to fade into the background and would not be readily distinguishable as solar infrastructure. Project features are relatively distant from the viewer and do not block views across the valley. At times of the day when the solar modules are reflective, such as pictured in Photo B, Project features would create a "lake effect" and would have a silvery, bluish cast that would blend in to some extent with the silvery-green of surrounding fields. At other times of the day, Project features would appear to be darker and would contrast with the fields but would blend in relatively well with existing stands of trees and patches of darker vegetation throughout the valley and foothills.

The presence of the Project would not significantly alter the character of the existing view because Project features are relatively distant, are not readily distinguishable as solar infrastructure, and do not block views across the valley. Project features would be noticeable but would not dominate the casual observer's view. With Project features in place, the level of visual quality of the view from KOP 4 would not change substantially. Vividness and unity of the view from KOP 4 would remain moderate. The intactness of the view would diminish from moderate to moderately low. The presence of solar infrastructure in the midst of farmland could be seen as an encroaching element in a rural setting. Overall, the visual quality would remain moderate.

As discussed in Section 4.2.4, KOP 4 represents a potential view of people who frequent the gas station and convenience store. Since this would be a potentially frequent view for local residents, they are likely to be at least moderately sensitive to the view from KOP 4. KOP 4 also represents the view of eastbound motorists along SR 138. This would be a view of short duration since motorists travel at high rates of speed along SR 138. Most motorists are not likely to be sensitive to the view.

5.1.5 KOP 5 – View from Neenach Residences

Figure 6 presents a photo of the existing view from 230th Street at C Street, 1 mile west of the Project site (Photo A). Figure 6 also presents a simulation of the view as it would appear during the Project's operational period (Photo B). Comparison of the existing image with the post-Project image indicates that when the Project is in place, change to the character and quality of the view would not be substantial.

In KOP 5, Project structures are visible in the middleground as a low strip just below the horizon line below the foothills and treeline in the distance. Project features are noticeable but do not attract attention since they are lower than other elements in the view, including trees, buildings, and transmission lines. Project features tend to disappear against the dark line of trees on the horizon and are obscured by the rough texture of the shrubby vegetation in the foreground. At times of the day when the solar modules are reflective, such as pictured in Photo B, Project features would create a "lake effect" and would have a silvery, bluish cast that would blend in to some extent with the silvery-green of surrounding fields. At other times of the day, Project features would appear to be darker and would blend in with the trees on the horizon line.

The presence of the Project would not substantially alter the existing view's character from KOP 5 because Project features do not stand out. With Project features in place, the level of visual quality of the view from KOP 5 would not change substantially. Vividness and unity

of the view from KOP 5 would remain moderate. The intactness of the view would diminish from moderate to moderately low. The presence of solar infrastructure in the midst of farmland could be seen as an encroaching element in a rural setting. Overall, the visual quality would remain moderate.

As discussed in Section 4.2.5, this view is limited to residents very close to the Project site, such as along 230th Street, because views would be screened by topography and vegetation from the majority of Neenach residences and streets. KOP 5 is the perspective of residents going to and from their homes on 230th Street and may be the view from yards or from east-facing windows at a limited number of houses along the east side of 230th Street. These views would potentially be frequent and of moderate to long term duration. Residents are assumed to be highly sensitive to the views from and around their homes.

5.1.6 KOP 6 – View from Pacific Crest Trail

Figure 7 presents a photo of the view from the PCT looking south, 3.6 miles from the Project site (Photo A). Figure 7 also presents a simulation of the view as it would appear during the Project's operational period (Photo B). Comparison of the existing image with the post-Project image indicates that when the Project is in place, change to the character and quality of the view would not be substantial.

From the PCT, Project features would be seen from above and would appear as two large, dark, geometric forms on the valley floor. Visually, they would relate to the parcels of undeveloped lands that contain dark stands of trees such as the Joshua Tree Woodland SEA parcels and the Arthur B. Ripley Park. From this distance, Project features are not readily distinguishable as solar infrastructure.

The presence of the Project would alter the character of the existing view from KOP 6 to some degree but would not substantially degrade it. Although the Project is prominent in the view from KOP 6, the solar infrastructure is not readily distinguishable from this distance. Furthermore, the Project footprint mimics the geometric form of parcels of undeveloped land that contain stands of trees. Project features are low and do not block views across the valley. Glare would not be visible because the solar modules would be south facing and KOP 6 is located north of the Project site.

With Project features in place, the level of visual quality of the view from KOP 6 would not change substantially. The vividness of the view would remain moderately high, although it has the potential to be more memorable with the solar field. The intactness of the view would change from moderately high to moderately low because Project infrastructure could be seen as an encroaching element in an otherwise rural and undeveloped landscape. The unity of the view remains moderately high because of the harmonious composition of an expansive view of a valley framed by hills. Overall, the visual quality would change from moderately high to moderate.

As discussed in Section 4.2.6, this view was chosen because visibility of the Project site would be blocked from the southern and eastern portions of the PCT in the Project area by topography, vegetation, and intervening structures. The Project site would be visible from portions of the PCT to the north. Hikers are likely to be very sensitive to the views.

5.2 Impact Significance

A discussion regarding whether the visual effects of the project would be significant is provided below. The assessment of these impacts has been structured by applying the criteria set forth in Appendix G of the CEQA Guidelines and the environmental reporting procedures of the Los Angeles County Department of Regional Planning.

5.2.1 CEQA

The CEQA Guidelines define a "significant effect" on the environment to mean a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including objects of historic or aesthetic significance." (14 CCR 15382) The four questions related to aesthetics that are posed for lead agencies follow, along with answers:

a. Would the project have a substantial adverse effect on a scenic vista?

The Project would not have a substantial adverse effect on a scenic vista. In the Project vicinity, publicly accessible locations that provide a scenic vista include the Poppy Reserve, PCT, Arthur B. Ripley Desert Woodland State Park, and Los Angeles County Desert Pines Wildlife Sanctuary. As discussed in Section 4.2.2 and Section 4.3, the Project would not be visible from within the Arthur B. Ripley Desert Woodland State Park or from the Los Angeles County Desert Pines Wildlife Sanctuary because of the screening effects of vegetation within the parks.

The Project would not have a substantially adverse effect on views from the Poppy Reserve. As shown in Figure 2, Photo B and discussed in Section 5.1.1, the Project would be visible from the Poppy Reserve but would not be very noticeable because of the Project features' distance and low profile. From this distance, Project structures would not be distinguishable as solar infrastructure and would blend in with other dark features on the valley floor such as stands of trees. Project features may be noticeable but would not be visible enough from the Poppy Reserve to attract a casual observer's attention.

Project features would be visible from portions of the PCT north of the Project site but would not have a substantially adverse effect. As is shown in Figure 7, Photo B and discussed in Section 5.1.6, the Project would be a minimum of 3.6 miles from those portions of the PCT from which it would be visible. From the PCT, Project features would be seen from above and would appear as two large, dark, geometric forms on the valley floor. Visually, these features would relate to the parcels of undeveloped lands that contain dark stands of trees such as the Joshua Tree Woodland SEA parcels and the Arthur B. Ripley Park. From this distance, Project features are not readily distinguishable as solar infrastructure. Because of their low profile, Project features would not block views across the valley.

b. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State Scenic Highway?

No. The project would not be visible from any State Scenic Highway. The closest Officially Designated State Scenic Highway is located 25 miles to the south in the San Fernando Valley

and does not offer views of the Project site. The closest Eligible State Scenic Highways are Segments of SR 14 and SR 58, which are a minimum of 25 miles northeast of the Project site and do not offer views of the Project site.

c. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

No. The Project would not substantially degrade the visual character of the site and its surroundings. As discussed in the Section 5.1 analysis of the project's impacts on the KOPs, the presence of the Project would somewhat alter the character of the views from publicly accessible areas in the Project vicinity. This is because solar infrastructure is a new feature in a landscape that is primarily farmland and undeveloped land. However, the change in character would not rise to the level of substantial degradation because the Project features are low and do not block views across the valley. Most of these views are relatively distant because the project is set back 1 mile from the nearest public roadway. In addition, the form of the Project features relates visually to existing land uses because rows of solar panels mimic the form of row crops in the area. The geometric and linear forms of the Project footprint and features are similar to the geometric and linear forms of existing elements such as roads, parcel boundaries, lines of trees planted as windbreaks, and existing transmission lines.

The Project would also not substantially degrade the existing visual quality of the site and its surroundings. As discussed in Section 5.1, the visual quality in the view from KOPs 1, 4, and 5 would remain substantially the same. From KOPs 2, 3, and 6, the visual quality would be reduced from moderately high to moderate when Project features are in place. These adverse visual impacts do not constitute a substantial or significant change in visual character or quality.

d. Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

No. The Project would not create a substantial new source of glare. Glare is a phenomenon that exists when there is too high a degree of contrast between bright and dark areas in a field of view which makes it difficult for the human eye to adjust to differences in brightness. For example, glare could be created if the filament of an unshielded light were visible at close range in an otherwise dark setting. The Illuminating Engineering Society of North America Outdoor Environment Lighting Committee (IENSA) defines glare as "the sensation produced by luminance in the visual field that is sufficiently greater than the luminance to which the eye has adapted to cause annoyance, discomfort, or loss of visual performance and visibility" (IENSA, 1999). The IESNA defines three categories of glare:

- *Disability glare* – the effect of stray light on the eye whereby visibility and visual performance are reduced. A direct glare source that produces discomfort may also produce disability glare by introducing a measurable amount of stray light to the eye.
- *Discomfort glare*–glare producing discomfort that does not necessarily interfere with visual performance or visibility.
- *Nuisance glare*–glare that causes complaints.

Photovoltaic collector panels are designed to absorb as much of the sun's energy as possible, and the glass panes that protect the collectors' surfaces are usually made of a specially formulated glass that permits 90 percent of the light to reach the collectors and to reflect only 10 percent of the light that falls on them. As a consequence, solar collector panels are not as reflective as normal glass surfaces. An additional factor to consider in evaluating the effect of any reflectivity of light off the panels is that because the energy of light decreases at a rate that is the square of the distance, the energy of any light reflecting off the collectors will fall off very rapidly with increasing distance.

As discussed in Section 3.2.2, the simulations were rendered to indicate their appearance at times when reflectivity would be the highest. Substantial glare would not be experienced at the Poppy Reserve because of the approximately 7 miles between the Poppy Reserve and Project site (see Section 5.1.1). Substantial glare would not be visible from the PCT because the solar modules would be south facing and their reflective surface would not be visible from the PCT to the north (see Section 5.1.6). The Project site is not visible from the PCT to the south and west because views are blocked by intervening topography, vegetation, and structures. Reflectivity would be visible in the Project vicinity (see Sections 5.1.2 to 5.1.5), and this reflectivity could create the illusion that the collector field is a lake during times of the day in which the solar panels are reflective. However, because this reflectivity will be angled upward, and because its intensity will be rapidly attenuated by distance, it will not create substantial levels of glare.

The Project would not create a substantial new source of nighttime light. Since the Project site is in a relatively rural area, any new project has the potential to create a new source of light. However, the light sources associated with the Project would be minimal and would be restricted to those required for nighttime safety and security. As discussed in Section 2.2, work would generally occur during daylight hours during the construction phase, eliminating the need for substantial night lighting. As discussed in Section 2.3, lighting would be designed to provide the minimum illumination needed for safety and security during the operation phase and would be shielded to minimize light spillover to surrounding areas.

5.2.2 Los Angeles County Initial Study

In addition to the CEQA questions above, Los Angeles County asks the following questions in its environmental reporting procedures:

a. **Is the project site substantially visible from or will it obstruct views along a scenic highway (as shown on the Scenic Highway Element), or is it located within a scenic corridor or will it otherwise impact the viewshed?**

No. The Project would not impact views from a scenic highway or scenic corridor. As discussed in CEQA checklist question b above, the Project is not located within view of a State Scenic Highway. The Project is also not located within view of a County scenic highway or corridor, including designated or eligible County Official Scenic Highways or other County scenic corridors, ridgelines, or hillsides (Los Angeles County, 2008).

b. Is the project substantially visible from a regional riding or hiking trail?

As discussed in CEQA checklist question a and in Section 5.1.6, Project features would be visible from portions of the PCT at a minimum of 3.6 miles north of the Project site but would not have a substantially adverse effect on scenic vistas from the these points.

As discussed in CEQA checklist question a and in Sections 4.2.1 and 5.1.1, the Project would be visible from limited portions of the Poppy Reserve, which contains hiking trails. However, it would not be substantially visible because of the distance and low profile of most Project features.

As discussed in Section 4.3, the Project would not be visible from trails within the Arthur B. Ripley Desert Woodland State Park because of screening by vegetation.

The Project would not be substantially visible from other riding or hiking trails in the Project vicinity.

c. Is the project site located in an undeveloped or undisturbed area that contains unique aesthetic features?

No. The Project is not located in an undeveloped or undisturbed area that contains unique aesthetic features. Project surroundings are typical of the western Antelope Valley. The Project is located in an area that has been used primarily for agriculture. Land use at the Project site includes active or temporarily fallow cropland, former cropland that has been recolonized by shrubby vegetation, and undeveloped areas. Land adjacent to the Project site is primarily former cropland that is undeveloped or is used for grazing. Parcels of undisturbed land in the Project surroundings are designated by Los Angeles County as a Joshua Tree Woodland SEA. Portions of the SEA are located 0.25 mile south of the Western Parcel and adjacent to the eastern side of the Eastern Parcel. However, the Project site is completely outside the SEA boundaries.

d. Is the proposed use out-of-character in comparison to adjacent uses because of height, bulk, or other features?

No. Project features would not be out of character with adjacent uses because of height, bulk, or other features. As discussed in Section 2.1, Project solar modules and support structures will be a maximum of 9 feet tall—somewhat shorter than existing trees and buildings near the Project. The structures carrying the proposed transmission line would be a maximum of 70 feet in height, which is similar to the height of existing transmission structures located along SR 138. The O&M building would be 15 feet tall and 450 square feet, which would make it somewhat smaller than the existing one- and two-story buildings near the Project.

Publicly accessible points from which the Project would be visible, including roadways and trails, are a minimum of 1 mile from the Project site. Although adjacent lands are mostly current or former cropland that contain few structures and Project features have a comparatively large footprint, from a distance the solar structures have a relatively low profile and are arrayed in rows that mimic the form of row crops in the area. Their height and dark color visually relate to dark stands of trees in adjacent Joshua Tree Woodland SEA parcels.

e. Is the project likely to create substantial sun shadow, light or glare problems?

No. Because of the low stature of the majority of Project features, the Project is not likely to cause sun shadow problems.

As discussed in CEQA checklist question d, the Project is not likely to create light or glare problems.

f. Other factors (e.g., grading or landform alteration)?

No. The Project would not require grading or landform alteration that would create substantial visual impacts. As discussed in Section 2.2, the solar modules would require a moderately flat surface for installation; some earthwork, including grading, fill, compaction, and erosion control, may be required. However, because the Project site is former cropland that is already relatively flat, grading and landform alteration activities would likely be relatively minor from a visual perspective and would not be substantially visible offsite.

5.3 Cumulative Impacts

The Project would contribute to cumulative impacts on visual resources to the extent that it would increase the amount of visible energy infrastructure in the Antelope Valley and incrementally contribute to a loss of rural character and loss of a feeling of open space. To assess cumulative impacts, the Project must be considered in conjunction with those of nearby projects.

AV Solar Ranch One is a proposed 230-MW solar PV project 2 miles east of the Project site along SR 138. The Project and AV Solar Ranch One would be located near one another. However, although motorists on SR 138 would see both projects in rapid succession, they would not be visible at the same time. Motorists traveling west would not see the proposed Project until they pass AV Solar Ranch One because views of the Project site west of 190th Street are blocked by topography and a Joshua Tree Woodland SEA parcel (see Figure 1). Motorists traveling east would see the Project site first but would not see AV Solar Ranch One until they had driven past the Project site and passed 190th Street. This is because the view would be blocked by a Joshua Tree Woodland SEA and other vegetation.

Both projects would be visible at the same time in views from higher elevations such as those from the PCT. However, the visual impacts are not considered to be cumulatively significantly.

SECTION 6

Mitigation Measures

As the impact analysis in Section 5 indicates, the Project would be consistent with the criteria set forth in Appendix G of the CEQA Guidelines and the environmental reporting procedures of the Los Angeles County Department of Regional Planning. No mitigation measures are proposed.

SECTION 7

References

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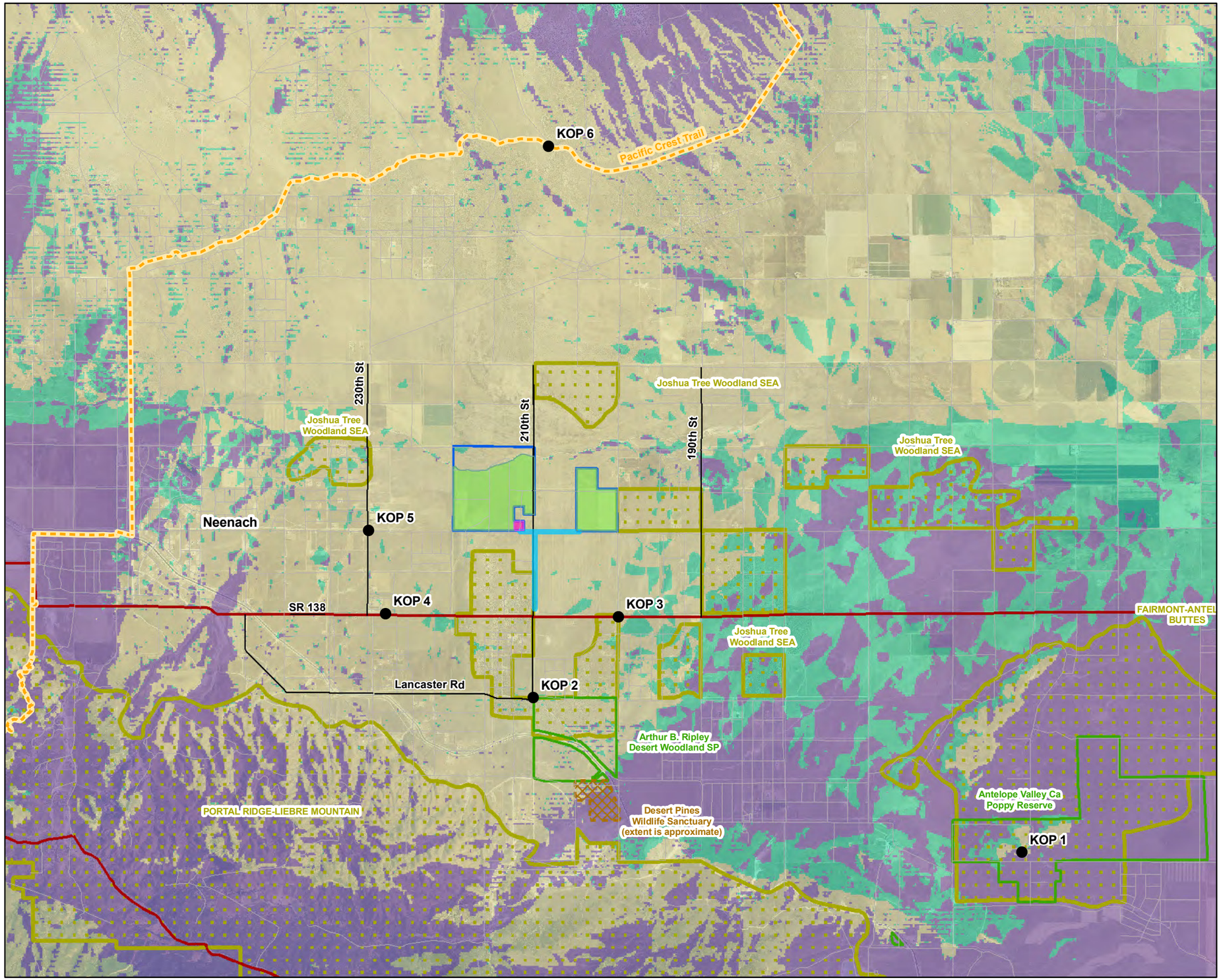
Figures



VICINITY MAP

LEGEND

LA County Desert Pines Wildlife Sanctuary[2]

California State Parks

Project Site Features

O& M Building

PV Panels

Transmission Line

Project Site

LA County Significant Ecological Area (SEA)

Viewshed Analysis

Areas within which the proposed solar collectors and transmission structures have the potential to be visible

Areas within which the solar collectors will not be visible but where the transmission structures will have the potential to be seen

Areas within which no project features will have the potential to be visible

Notes:
1. Area of interest subject to change.
2. Extent of Desert Pines Santcuary are approximated

N

0
Miles

FIGURE 1
Project Visibility and KOP Locations
Alpine Solar
NRG Energy

A. KOP-1. Existing view toward the Project site from the Poppy Reserve at Kitanemuk Vista Point.

B. KOP-1. Simulated view toward the Project site from the Poppy Reserve at Kitanemuk Vista Point.

FIGURE 2
KOP-1. View from Antelope Valley California Poppy Reserve
Alpine Solar
NRG Energy

A. KOP-2. Existing view toward the Project site from the north edge of Arthur B. Ripley Desert Woodland State Park.

B. KOP-2. Simulated view toward the Project site from the north edge of Arthur B. Ripley Desert Woodland State Park.

FIGURE 3
KOP-2. View from north edge of Arthur B. Ripley Desert Woodland State Park
Alpine Solar
NRG Energy

A. KOP-3. Existing view toward the Project site from SR 138 at 200th Street.

B. KOP-3. Simulated view toward the Project site from SR 138 at 200th Street.

FIGURE 4
KOP-3. View from SR 138 at 200th Street
Alpine Solar
NRG Energy

A. KOP-4. Existing view toward the Project site from Neenach gas station and convenience store.

B. KOP-4. Simulated view toward the Project site from Neenach gas station and convenience store.

FIGURE 5
KOP-4. View from Neenach gas station and convenience store
Alpine Solar
NRG Energy

A. KOP-5. Existing view toward the Project site from Neenach Residences.

B. KOP-5. Simulated view toward the Project site from Neenach Residences.

FIGURE 6
KOP-5. View from Neenach Residences
Alpine Solar
NRG Energy

A. KOP-6. Existing view toward the Project site from the Pacific Crest Trail.

B. KOP-6. Simulated view toward the Project site from the Pacific Crest Trail.

FIGURE 7
KOP-6. View from the Pacific Crest Trail
Alpine Solar
NRG Energy

FIGURE 8
Character Photo-1. View from within
Arthur B. Ripley Desert Woodland State Park
Alpine Solar
NRG Energy

Appendix K
Mitigation and Monitoring Program

MITIGATION MONITORING PROGRAM

PROJECT NO. RENVT200900128/ RCUPT200900158

The Department of Regional Planning staff has determined the following conditions or changes in the project are necessary in order to assure there will be no substantial evidence the proposed project will have a significant effect on the environment.

The applicant shall deposit the sum of $6,000 with the Department of Regional Planning (DRP) within 30 days of permit approval in order to defray the cost of reviewing and verifying the information contained in the annual reports or as required by this Mitigation Monitoring Program.

#	Mitigation	Action Required	When Monitoring to Occur	Responsible Agency or Party	Monitoring Agency or Party
Geotechnical					
	Submit a Geotechnical / Soils Report to the Los Angeles County Department of Public Works for review and approval.	Submit Geotechnical/Soils report for review and approval	Prior to the issuance of grading permit	Applicant	DPW
	Construction activities will be conducted in accordance with a SWPPP, which will be completed and available onsite at all times during construction and will incorporate industry standard BMPs for erosion and dust control. BMPs will be installed, as appropriate, prior to the start of ground disturbance and will be maintained throughout Project construction.	Submit detailed liquefaction and seismic stability analysis for review and approval	Prior to issuance of grading permit	Applicant	DPW
Flood					
	A final Hydrology and Hydraulics Report will be prepared that includes recommendations to address potential design and flood constraints. The final report will be provided to the Department of Public Works prior to issuance of grading permits for the Project. The design features included in the final report will be implemented.	Submit Hydrology/ Hydraulics report for review and approval	Prior to issuance of grading permit	Applicant	DPW

#	Mitigation	Action Required	When Monitoring to Occur	Responsible Agency or Party	Monitoring Agency or Party
Fire					
	Prepare and submit a Fire Protection and Prevention Plan to the LACFD for review and approval prior to issuance of a Grading Permit.	Submit a Fire Protection and Prevention Plan for review and approval	Prior to issuance of grading permit	Applicant	Fire Department DRP
Noise					
	Construction equipment and vehicles will be fitted with efficient and well-maintained mufflers to reduce noise emission levels. In addition, the Project construction equipment and vehicles will be maintained according to manufacturers' instructions and recommendations.	Submit a copy of approved Building Plans	Field verification during all phases of construction	Applicant	DPW DRP
Air Quality					
	Prepare and submit a Dust Control Plan.	Submit a Dust Control Plan for review and approval	Prior to issuance of grading permit	Applicant	AVAQMD DRP
	The construction contractor will ensure that all mechanical equipment associated with Project construction is properly tuned and maintained in accordance with the manufacturers' specifications.	Submit a copy of approved Building Plans	Field verification during all phases of construction	Applicant Contractor	AVAQMD DRP
	Engine idle time will be restricted to no more than 5 minutes as required by the California Air Resources Board engine-idling regulation. Exceptions in the regulation include vehicles that need to idle as part of their operation, such as concrete mixer trucks.	Submit a copy of approved Building Plans	Field verification during all phases of construction	Applicant Contractor	AVAQMD DRP
	Any off-road stationary and portable gasoline-powered equipment brought onsite for construction activities will have U.S. Environmental Protection Agency (EPA) Phase 1/Phase 2 compliant engines.	Submit engine documentation for review and approval	Prior to issuance of grading permit	Applicant Contractor	AVAQMD DRP

#	Mitigation	Action Required	When Monitoring to Occur	Responsible Agency or Party	Monitoring Agency or Party
Biota					
	Construction plans will be developed to avoid active burrows within 165 feet of the impact zone or to provide for relocating burrowing owls to a protected onsite or offsite mitigation site. If avoidance is not practicable, a mitigation and monitoring plan will be developed in consultation with the California Department of Fish and Game (CDFG) and will be implemented and funded by the Applicant.	Submit grading plans for review and approval	Field inspection during grading and construction	Applicant Contractor	DRP Department of Fish and Game
	Pre-construction surveys will be conducted for nesting birds and the American badger. If necessary, construction plans will be developed to avoid nesting periods or to provide for avoidance or relocation of the American badger.	Consult with the Department of Fish and Game	Prior to issuance of a grading permit	Applicant Contractor	DRP Department of Fish and Game
	Pre-construction surveys will be conducted for active Swainson's hawk nests in suitable habitat located within 0.5 mile of the Project (California Energy Commission and CDFG, 2010).	Consult with the Department of Fish and Game	Prior to issuance of a grading permit	Applicant Contractor	DRP Department of Fish and Game
	Pre-construction clearance surveys will be conducted for ground-dwelling special-status species, including coast horned lizard, to ensure that these species are excluded from the impact zone during construction.	Consult with the Department of Fish and Game	Prior to issuance of a grading permit	Applicant Contractor	DRP Department of Fish and Game
	Develop a habitat management plan for the burrowing owl.	Submit a habitat management plan for review and approval	Prior to issuance of a grading permit	Applicant Contractor	DRP Department of Fish and Game

#	Mitigation	Action Required	When Monitoring to Occur	Responsible Agency or Party	Monitoring Agency or Party
Cultural Resources					
	If cultural resources or materials are discovered during ground-disturbing activities, work near the discovery should cease and the area should be protected until the find can be evaluated by a qualified archaeologist. Depending on the nature of the find, additional consultation with the State Historic Preservation Office or with Tribal leaders may be necessary before work can resume in the area of the find.	Halt work if cultural resources are discovered	During construction	Applicant Contractor	South Central Coastal Information Center DRP
	If human remains are encountered, according to State Health and Safety Code Section 7050, no further disturbance will occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98.	Halt work if cultural resources are discovered	During construction	Applicant Contractor	County Coroner DRP
	Prior to construction, the Applicant will retain a qualified paleontologist to design and implement a mitigation program where excavations deeper than 6 feet would occur.	Submit grading plans for review and approval	Prior to start of grading activities	Applicant	DPW DRP
	Prior to ground disturbance, all construction personnel will be given awareness training, which will include instruction in both verbal and written forms that cultural or paleontological resources may be encountered during construction.	Provide worker awareness training	Prior to start of grading activities	Applicant Contractor	DRP

#	Mitigation	Action Required	When Monitoring to Occur	Responsible Agency or Party	Monitoring Agency or Party
Traffic					
	Prepare a Construction Traffic Control Plan and will submit the Plan to the County and Caltrans for review and approval prior to starting construction. The Plan will include flagging, safety measures, signage, and other related measures to protect the traveling public and construction workforce.	Submit a Traffic Control Plan	Prior to start of grading activities	Applicant Contractor	DPW DRP

As the applicant, I agree to incorporate these changes/conditions into the project and understand that the public hearing and consideration by the Hearing Officer and/or Regional Planning Commission will be on the project as changed/conditioned.

_____ _____

Applicant Date

☐ No response within 10 days. Environmental determination requires that these changes/conditions be included in the project.

_____ _____

Staff Date

Appendix L
Phase I and II ESAs

AVALON ENVIRONMENTAL CONSULTANTS

PHASE I ENVIRONMENTAL SITE ASSESSMENT
PERFORMED AT
LOS ANGELES COUNTY TAX ASSESSOR'S
APNS 3256-015-005, 006, 007, 008, 009, 010,
011, 013, 014, 015, 016, AND 017
LOS ANGELES COUNTY, CALIFORNIA 93536
PROJECT NUMBER: 0620-685-1

PREPARED FOR
ALTA VISTA SUNTOWER, LLC.
PASADENA, CALIFORNIA
JUNE 2, 2008

AVALON ENVIRONMENTAL CONSULTANTS
TUSTIN, CALIFORNIA
714 836 6632
714 836 6642 FAX

PHASE I ENVIRONMENTAL SITE ASSESSMENT,
PERFORMED AT
LOS ANGELES COUNTY TAX ASSESSOR'S
APNS 3256-015-005,006, 007, 008, 009, 010,
011, 013, 014, 015, 016, AND 017
LOS ANGELES COUNTY, CALIFORNIA 93536
PROJECT NUMBER: 0620-685-1

PREPARED FOR
ALTA VISTA SUNTOWER, LLC.
PASADENA, CALIFORNIA
JUNE 2, 2008

PREPARED BY: _____

Mohammad Navid, REA
Project Manager

REVIEWED BY: _____

Trevor D. Santochi PG, CEG
Principal

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY 1

2.0 GENERAL SITE INFORMATION 2
- 2.1 Physical Building/Real Property Description 2
- 2.2 Geology/Hydrology 2
- 2.3 Land Usage in the Property Vicinity 3

3.0 HISTORICAL SITE INFORMATION 3
- 3.1 Sanborn Fire Insurance Maps 3
- 3.2 Topographic Maps 4
- 3.3 Aerial Photographs 4
- 3.4 Building Permit Records 5

4.0 ENVIRONMENTAL RECORD RESEARCH 5
- 4.1 Information Sources 5
- 4.2 Site Records 5
- 4.3 Federal/State - Listed Properties 6
  - 4.3.1 NPL Sites 6
  - 4.3.2 CERCLIS/NFRAP Sites 6
  - 4.3.3 State and Tribal Solid Waste Landfill Sites 6
  - 4.3.4 State and Tribal LUST Sites 6
  - 4.3.5 State and Tribal Sites 6
  - 4.3.6 RCRA Sites 6
  - 4.3.7 State and Tribal UST/AST Sites 7
  - 4.3.8 ERNS Sites 7

5.0 VISUAL SITE ASSESSMENT 7
- 5.1 Storage Tanks 7
- 5.2 Polychlorinated Biphenyls ("PCBs") 7
- 5.3 Storage of Chemicals and Hazardous Materials 8
- 5.4 Evidence of Environmental Contamination 8
- 5.5 Solid Waste 9
- 5.6 Potentially Restrictive Property Features/Uses 9
- 5.7 Pits, Ponds or Lagoons 9
- 5.8 Visual Observations of Adjacent Properties 9
- 5.9 Drains, Sumps or Waste Water 9
- 5.10 Wells 9
- 5.11 Mechanical Equipment 9

6.0 USER PROVIDED INFORMATION 10

7.0 ADDITIONAL ANALYSIS 11
7.1 Lead in Drinking Water 11
7.2 Radon 11
7.3 Asbestos Observations 12

8.0 FINDINGS, CONCLUSIONS AND RECOMMENDATIONS 12
8.1 Findings 12
8.2 Conclusions 13
8.3 Recommendations 13

9.0 LIMITATIONS TO THE REPORT 14
9.1 General Limitations to the Report 14
9.2 Limitations of Asbestos Observations 14
9.3 Conflict Certification 15
9.4 Declarations 15

APPENDICES 16

1.0 EXECUTIVE SUMMARY

Avalon Environmental Consultants, Inc. (Avalon), conducted a Phase I Environmental Site Assessment (ESA) at the request of Alta Vista Suntower, LLC. The assessment was performed by Mohammad Navid, Project Manager with Avalon. The assessment was performed at Los Angeles County Tax Assessor's APNs 3256-015-005, 006, 007, 008, 009, 010, 011, 013, 014, 015, 016, and 017, northwest of Lancaster, in the County of Los Angeles, California, on May 15, 2008. According to Alta Vista Suntower, LLC, the subject property is to be developed with a solar power plant. This Phase I ESA was performed using ASTM Standard Practice E1527-05 as guidance.

Based upon the information reviewed during this site assessment, Avalon identified the following findings:

- The subject property consists of approximately 584 acres of farmland with a farmstead at the intersection of West Avenue C and West 220th Street West. The farmstead structures appear to be newly constructed, pre-fabricated structures. The subject property has consisted of farmland dating back to at least 1952 and vacant land before, dating back to at least 1922.

- Portions of the subject property have been used for farming carrots for approximately the last two years. During the farming season, small quantities pesticides and fertilizers have been applied to the crops, however, no pesticides or fertilizers have been stored on the subject property.

Based on the above findings, Avalon concludes the following:

- The subject property appears to have a Recognized Environmental Condition (REC) as defined by ASTM Standard E1527-05 due to the use of pesticides and fertilizers on the subject property, however, based on the small quantities used, it is unlikely that the subsurface of the subject property has been adversely impacted.

  The term *recognized environmental conditions*, as defined by ASTM Standard Practice E1527-05, is the presence or likely presence of any hazardous substance or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release into structures on the property or into terminus ground, groundwater, or surface water of the property.

- Avalon was unable to inspect the interiors of the structures on the subject property. Based on a visual reconnaissance, it appears that most of the buildings are newly constructed, pre-fabricated structures, however, there is a potential that ACMs may exist in the subject property buildings constructed prior to 1980.

Based on the above conclusions, Avalon recommends the following:

- Prior to any renovation or demolition activities, a Comprehensive Asbestos Survey should be conducted by a Certified Asbestos Consultant to identify possible ACMs present in the subject property buildings.

- No further investigation at this time.

2.0 GENERAL SITE INFORMATION

2.1 Physical Building/Real Property Description

The subject property consists of a several parcels with a total area of approximately 584 acres. The subject property is located on the east side of 220th Street West between West Avenue B and West Avenue C in an undeveloped area of the County of Los Angeles. Most of the subject property consist of farmland interspersed with natural vegetation. A portion of the subject property at the intersection of 220th Street West and Avenue C West has been developed with a farmstead consisting of a single family residence and storage/tool sheds. The farmstead structures appear to be newly constructed, pre-fabricated structures. Avalon was unable to inspect these portions of the subject property, however, a visual reconnaissance did not reveal any obvious environmental concerns. There is a high probability that septic tanks are located in these areas of the subject property.

Site History Summary

The subject property has consisted of farmland with a farmstead dating back to at least 1952 and vacant land before, dating back to at least 1922.

2.2 Geology/Hydrology

Geology - The subject property lies within in the Western Mojave Desert region which covers parts of Kern, Los Angeles and San Bernardino Counties. The region is bounded by large mountain ranges including the San Bernardino Mountains to the south, and the Tehachapi ranges to the northwest. The surface of the Western Mojave Desert region is largely covered by non marine sand, gravel and silt and is made up by a series of playas. The basement rocks consist of (a) old crystalline basement rocks (igneous plutonic and metamorphic rocks), (b) sedimentary rocks (Tertiary), and recent to late recent quaternary basalt flows. The elevations of the Western Mojave Desert region range from 4,000 feet in the foothills to 2,000 feet in the dry lakes and playas.

Hydrology - Based on data from the onsite groundwater wells, groundwater is approximately 165 feet below ground surface (bgs). Based on the topography of the this area, groundwater is anticipated to flow toward the south.

A topography and site location map is provided in Appendix I.

2.3 Land Usage in the Property Vicinity

The subject property is located in an undeveloped area in the County of Los Angeles. Adjacent properties are as follows:

North: Vacant farmland.
South: Vacant land.
East: Vacant land.
West: 220th Street West with vacant land beyond.

3.0 HISTORICAL SITE INFORMATION

The site history of the subject property was reviewed through Sanborn Fire Insurance Maps, topographic maps, aerial photographs, and building permit records.

3.1 Sanborn Fire Insurance Maps

Founded in 1867 by D. A. Sanborn, the Sanborn Map Company was the primary American publisher of fire insurance maps for nearly 100 years. Sanborn fire insurance maps are large-scale plans containing data that can be used to estimate the potential risk for urban structures. This includes information such as the outline of each building, the size, shape and construction materials, heights, and function of structures, location of windows and doors. The maps also give street names, street and sidewalk widths, property boundaries, building use, and house and block numbers. Seven or eight different editions represent some areas.

Extensive information on building use is given, ranging from symbols for generic terms such as stable, garage, and warehouse to names of owners of factories and details on what was manufactured in them. In the case of large factories or commercial buildings, even individual rooms and the uses to which they were put are recorded on the maps. Other features shown include pipelines, railroads, wells, dumps, and heavy machinery.

Sanborn Fire Insurance Maps were not available for the subject property area.

3.2 Topographic Maps

Historical topographic maps issued by the U.S.G.S. were reviewed for the subject property and the adjacent properties. The review of the maps revealed the following information:

1922- The subject property is depicted as vacant land. The surrounding properties are depicted as vacant undeveloped land.

1965- The subject property is depicted as vacant land with a farmstead along West Avenue C, east of 220th Street West. Two wells are also depicted along West Avenue C , along the southern boundary of the subject property. The surrounding properties are depicted as vacant undeveloped land.

1974- The subject property and the surrounding properties are unchanged from the previous map.

1992- The subject property and the surrounding properties are unchanged from the previous map.

No areas of environmental concern were noted in any of the maps.

3.3 Aerial Photographs

Aerial photographs were reviewed for the subject property and the adjacent properties. The review of the photographs revealed the following information:

1952- The subject property appears to be vacant farmland interspersed with natural vegetation. A small farmstead consisting of a single residence and several small sheds is located along the north side of West Avenue C, east of 220th Street West. Two irregular-shaped portions along the southern boundary of the subject property appear to be vacant land covered with natural vegetation. The surrounding properties appear to be vacant undeveloped land and farmland.

1968- The subject property appears unchanged from the previous photograph with the exception that a few of the sheds near the farmstead have been removed. The surrounding properties are unchanged from the previous photograph.

1974- The subject property appears unchanged from the previous photograph with the exception that a section of the previously unplowed portion along the southern boundary has been plowed. The surrounding properties are unchanged from the previous photograph.

1989- The subject property and the surrounding properties are unchanged from the previous photograph.

1994- The subject property appears to be vacant land. The farmstead remains along the southern portion of the subject property. The surrounding properties are unchanged from the previous photograph.

2002- The subject property and the surrounding properties are unchanged from the previous photograph.

2004- The subject property appears unchanged from the previous photograph with the exception a few of the sheds near the farmstead have been removed. The surrounding properties are unchanged from the previous photograph.

2005- The subject property appears to be mostly vacant land with the existing farmstead along West Avenue C. The irregular-shaped portion east of the farmstead, which was previously undeveloped, appears to have been developed with a dirt "Moto-Cross" motorcycle race track. The surrounding properties are unchanged from the previous photograph.

No areas of environmental concern were noted in any of the aerial photographs.

3.4 Building Permit Records

Building permit records were reviewed through the County of Los Angeles Tax Assessor's Office. The records indicated that the subject property APNs consist of vacant unimproved land.

4.0 ENVIRONMENTAL RECORD RESEARCH

4.1 Information Sources

During the course of the environmental records research, Avalon used Environmental Data Resources Radius Map™ Report No. 2230727.2s. The list of records reviewed included NPL, CERCLIS, SWLF, LUST, State Sites, RCRA, UST, AST, and ERNS (See Appendix IV, EDR Radius Map Report for a comprehensive description of each list).

4.2 Site Records

During the course of the assessment, Avalon did not encounter on-site records pertaining to potential contamination of the subject property caused by on-site operations or activities.

4.3 Federal/State - Listed Properties

4.3.1 NPL Sites

No sites are listed on the Environmental Protection Agency's (EPA) National Priority List (NPL) within a one mile radius of the subject property.

4.3.2 CERCLIS/NFRAP Sites

No sites are listed on the EPA Comprehensive Environmental Response Compensation and Liability Act List (CERCLIS) and No Further Remedial Action Planned (NFRAP) list within a one-half mile radius of the subject property.

4.3.3 State and Tribal Solid Waste Landfill Sites

No sites are listed on the California Integrated Waste Management Board for active or inactive landfills (SWL) within a one-half mile radius of the subject property.

4.3.4 State and Tribal LUST Sites

No sites are listed on the California EPA's Leaking Underground Storage Tank List (LUST) within a one-half mile radius of the subject property.

4.3.5 State and Tribal Sites

No sites are listed on the California Department of Toxic Substances Control's list of historical Cal-Sites or on the ENVIROSTOR database within a one mile radius of the subject property.

4.3.6 RCRA Sites

No sites are listed on the EPA's Resource Conservation and Recovery (RCRA) Program of Treatment, Storage, or Disposal (TSD) facilities or the RCRA Corrective Actions and associated TSDs (CORRACTS) within a one-mile radius of the subject property.

No sites are listed on the EPA's RCRA Program of Large and Small Quantity Generators within a one-quarter mile radius of the subject property.

4.3.7 State and Tribal UST/AST Sites

No sites are listed on the California State Water Resource Control Board's (CSWRCB) inventory of registered Underground Storage Tanks (USTs) located within a one-quarter mile radius of the subject property.

No sites are listed on the CSWRCB's inventory of registered Aboveground Storage Tanks (ASTs) located within a one-quarter mile radius of the subject property.

4.3.8 ERNS Sites

The subject property is not listed on the Emergency Response Notification System (ERNS) List.

5.0 VISUAL SITE ASSESSMENT

Avalon conducted a visual site assessment to identify recognizable areas of potential environmental contamination which could impact the air, soil, surface water or groundwater. These areas include the presence of Aboveground or Underground Storage Tanks (ASTs or USTs), potential Polychlorinated Biphenyl (PCB) containing electrical equipment, improper storage and handling of hazardous materials and observations for off-site as well as on-site contamination sources.

5.1 Storage Tanks

Avalon did not observe any evidence of USTs on the subject property. According to the onsite occupant, John Calandri, a 4,500 gallon AST containing diesel fuel is located on the subject property. Since this is an elevated AST, it is unlikely that the subsurface of the subject property has been significantly impacted.

5.2 Polychlorinated Biphenyls ("PCBs")

The EPA banned the manufacture and sale of Polychlorinated Biphenyls (PCBs) containing transformers in 1978. Prior to 1978, transformers were frequently filled with dielectric fluid containing PCB-laden oil. By 1985, the EPA required that commercial property owners with transformers containing more than 500 parts per million (ppm) PCBs must register the transformer with the local fire department, provide exterior labeling, and remove combustible materials within five meters of the transformer (40 Code of Federal Regulation, sec. 761.30, “Fire Rule”).

The EPA has the following categories for PCB-containing transformers:

- if less than 50 ppm PCB, then the transformer is a non-PCB containing transformer.
- if between 50 and 499 ppm PCB, then the transformer is considered to be a PCB contaminated transformer and must conform to the EPA Fire Rule for disposal; and
- if greater than 500 ppm PCB, then the transformer is a PCB-transformer.

PCBs may also be found in capacitors and fluorescent lighting unit ballasts. The EPA banned the manufacture of PCBs in 1978, and all light ballasts manufactured thereafter should be labeled by the manufacturer as "No PCBs".

Avalon did not observe any transformers located on the subject property.

5.3 Storage of Chemicals and Hazardous Materials

Avalon did not observe the storage of any chemicals or hazardous materials on the subject property, however, small quantities pesticides and fertilizers are applied to the crops in the farmed areas of the subject property. The following pesticides and fertilizers have been used on portions of the subject property:

Material	Total used per Year
Lorox DF	3 pounds
Ridomil	32 ounces
Asano	4 ounces
Bravo	1.4 pounds
Roveral	1.5 pints

Some of the above pesticides and fertilizers may be a threat to surface and groundwater, however, based on the small quantities used, it is unlikely that the subsurface of the subject property has been adversely impacted.

5.4 Evidence of Environmental Contamination

Avalon did not observe evidence of environmental contamination on the subject property.

5.5 Solid Waste

Solid wastes are disposed of by the occupants of the farmstead as needed.

5.6 Potentially Restrictive Property Features/Uses

Avalon did not observe any potentially restrictive property features or uses. This observation is limited to those property features causing a significant environmental effect that could be readily identified through visual observations.

5.7 Pits, Ponds or Lagoons

Avalon did not observe any pits, ponds or lagoons on the subject property.

5.8 Visual Observations of Adjacent Properties

A visual reconnaissance of the subject property shows the adjacent properties to be vacant undeveloped land and farmland with no apparent cause for environmental concern.

5.9 Drains, Sumps or Waste Water

Avalon did not observe any evidence of drains, sumps or waste water on the subject property.

5.10 Wells

Avalon observed two groundwater wells on the subject property used for irrigating the onsite farms. According to data compiled by the U.S.G.S., the wells were installed in 1955 and are 750 feet deep. No environmental concerns were noted.

5.11 Mechanical Equipment

Avalon did not observe any permanent mechanical equipment on the subject property.

6.0 USER PROVIDED INFORMATION

User Provided Information includes Title Records, Specialized Knowledge, Valuation Reduction for Environmental Issues, Owner, Property Manager, and Occupant Information.

A User Questionnaire was completed by Mr. Michael Bass of Alta Vista Suntower, LLC.

		Yes	No
(1.)	**Environmental cleanup liens that are filed or recorded against the site (40 CFR 312.25)**		√
(2.)	**Activity and land use limitations that are in place on the site or that have been filed or recorded in a registry (40 CFR 312.26)**		√
(3.)	**Specialized knowledge or experience of the person seeking to qualify for the Landowner Liability Protection (LLP) (40 CFR 312.28)**		√
(4.)	**Relationship of the purchase price of the fair market value of the property if it were not contaminated (40 CFR 312.29)**		√
(5.)	**Commonly known or reasonably ascertainable information about the property (40 CFR 312.30)**		
A.	**Do you know the past uses of the property?**		√
B.	**Do you know of specific chemicals that are present or once were present at the property?**		√
C.	**Do you know of spills or other chemical releases that have taken place at the property?**		√
D.	**Do you know of any environmental cleanups that have taken place at the property?**		√
(6.)	**The degree of obviousness of the presence or likely presence of contamination at the property, and the ability to detect the contamination by appropriate investigation (40 CFR 312.31)**		√

Key Site Manger- Avalon interviewed Mr. Michael Bass of Alta Vista Suntower, LLC. According to Mr. Bass, the subject property consists of vacant land and farmland. Mr. Bass is unaware of any environmental concerns associated with the subject property.

Avalon contacted Mr. John Calandri of Calandri/SonRise Farms, LP (Calandri/SonRise), who leases and uses portions of the subject property for farming carrots. Avalon was informed that portions of the subject property have been used by Calandri/SonRise for farming over the last two years. Mr. Calandri stated that he is unaware of any USTs on the subject property or of any environmental concerns associated with the subject property.

Local Agencies- Avalon contacted the Los Angeles County Department of Public Works, Environmental Programs to inquire about any files for the subject property area. No files involving hazardous materials were found at the agency.

7.0 ADDITIONAL ANALYSIS

In addition to the site assessment, Avalon also reviewed radon testing data from the California Department of Health Services and contacted local agencies regarding lead content in drinking water.

7.1 Lead in Drinking Water

Sampling for lead in drinking water was not conducted per the Scope of Work for this Phase I Environmental Assessment. Drinking water is not currently provided to the subject property.

7.2 Radon

Avalon reviewed the *California State Radon Survey* which was conducted by the Department of Health Services (DHS) in conjunction with the United States Environmental Protection Agency (U.S. EPA). The California survey is a part of an ongoing program by the U.S. EPA to measure levels of radon in all states in the country. In this report, California was organized into nine sampling regions using general geology, climate and existing radon distribution knowledge. The geographically distributed results were later weighted for population distribution by the U.S. EPA. The subject property is located in Region 9 which includes Los Angeles, San Bernardino, Orange, Riverside, San Diego and Imperial Counties. The results of the survey indicate that over 95 percent of all homes in this region have radon concentrations below 4.0 picoCuries per liter of air (pCi/l). The average radon concentration for Region 9 is 0.6 pCi/l, well below the U.S. EPA action limit of 4.0 pCi/l.

The only definitive way to verify the presence of radon is to test the property for radon; however, due to the reported low concentrations of radon in the subject property region, it is unlikely the subject property will be impacted by the presence of radon.

7.3 Asbestos Observations

Friable ACM is defined as crushable to a powder with finger pressure. The Environmental Protection Agency (EPA) states that any friable material containing greater than 1% asbestos is considered a hazardous material. Friable asbestos may exist in ceiling materials and wall components. Non-friable asbestos may exist in the floor coverings, walls, and roofing components. These materials should not be disturbed unless it has been determined that they are non asbestos-containing. Alteration or removal of these products should be performed by a California Certified Asbestos Abatement Contractor.

Guidelines used for the inspection were established by the United States Environmental Protection Agency (U.S.EPA) in the following publications:

- GUIDANCE FOR CONTROLLING ACM IN BUILDINGS, Office of Pesticides Toxic Substances, DOC #560/5-85-024.

- FRIABLE ACM IN SCHOOLS IDENTIFICATION AND NOTIFICATION, Federal Register 40 CFR Part 763, May 27, 1982.

Avalon was unable to inspect the structures on the subject property. Based on a visual reconnaissance, it appears that most of the buildings are newly constructed, pre-fabricated structures, however, there is a potential that ACMs may exist in the subject property buildings constructed prior to 1980. In order to verify or refute the presence of asbestos in suspect building materials, a comprehensive asbestos survey should be performed. Asbestos surveys should be conducted by a Certified Asbestos Consultant.

8.0 FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

8.1 Findings

Based on information obtained during this assessment, Avalon identified the following significant findings:

- General Site Information - The subject property consists of a several parcels with a total area of approximately 584 acres. The subject property is located on the east side of 220th Street West between West Avenue B and West Avenue C in an undeveloped area of the County of Los Angeles. Most of the subject property consist of farmland interspersed with natural vegetation. A portion of the subject property at the intersection of 220th Street West and Avenue C West has been developed with a farmstead consisting of a single family residence and storage/tool sheds. Avalon was unable to inspect these portions of the subject property, however, a visual reconnaissance did not reveal any

obvious environmental concerns. There is a high probability that septic tanks are located in these areas of the subject property.

- Historical Site Information - The subject property has consisted of farmland with farmsteads dating back to at least 1952 and vacant land before, dating back to at least 1922. Portions of the subject property have been used for farming carrots for approximately the last two years. During the farming season, small quantities pesticides and fertilizers have been applied to the crops, however, no pesticides or fertilizers have been stored on the subject property.

- Environmental Record Search - No areas of environmental concern were identified as part of the environmental radius search.

- Additional Analysis - Published data concerning the occurrence of radon in the subject property area indicates a low potential for concern.

8.2 Conclusions

Based upon the information reviewed during this site assessment, Avalon concludes the following:

- The subject property appears to have a REC as defined by ASTM Standard E1527-05 due to the use of pesticides and fertilizers on the subject property, however, based on the small quantities used, it is unlikely that the subsurface of the subject property has been adversely impacted.

- Avalon was unable to inspect the interiors of the structures on the subject property. Based on a visual reconnaissance, it appears that most of the buildings are newly constructed, pre-fabricated structures, however, there is a potential that ACMs may exist in the subject property buildings constructed prior to 1980.

8.3 Recommendations

Based on the above conclusion, Avalon recommends the following:

- Prior to any renovation or demolition activities, a Comprehensive Asbestos Survey should be conducted by a Certified Asbestos Consultant to identify possible ACMs present in the subject property buildings.

- No further investigation at this time.

9.0 LIMITATIONS TO THE REPORT

9.1 General Limitations to the Report

The findings, conclusions and recommendations of this report are limited by the contract technical requirements and the methods used to perform these services. These services have been performed in accordance with the standard Scope of Work for Phase I Environmental Site Assessments. In order to perform a comprehensive environmental evaluation, subsurface investigation and testing would be required to definitively determine if contamination has had an impact on the subject property. Therefore, the findings, conclusions and recommendations presented herein have been based solely on our visual observations, interview results and database reviews.

In preparing this report, Avalon has relied on information derived from secondary sources, computer databases and personal interviews. Except as set forth in this report, Avalon has made no independent investigation as to the accuracy and completeness of the information derived from secondary sources, computer databases or personal interviews, and has assumed that such information is accurate and complete.

Avalon has made no environmental determination for those properties which are listed in the Environmental FirstSearch Radius Report as unmapped, non-geocoded, or orphan sites.

All recommendations, findings and conclusions stated in this report are based upon facts, circumstances and industry accepted procedures for such services as they existed at the time that this report was prepared (e.g., federal, state and local laws, rules, regulations, market conditions, economic conditions, political climate and other applicable matters.) A change in any fact, circumstance or industry accepted procedure upon which this report is based, may adversely affect the recommendations, findings and conclusions expressed in this report.

This report has been prepared for the benefit of Alta Vista Suntower, LLC. and may not be relied upon by any other person or entity without the written authorization of Avalon Environmental Consultants.

9.2 Limitations of Asbestos Observations

Guidelines used for typical asbestos surveys were established by the Environmental Protection Agency in the 1985 publication: GUIDANCE FOR CONTROLLING ACM IN BUILDINGS, OFFICES OF PESTICIDES AND TOXIC SUBSTANCES, DOC #560/5-85-024 and/or THE ASBESTOS SCHOOL OF HAZARD DETECTION AND CONTROL ACT OF 1980 (P.L. 96-270, EPA's 1982 publication: FRIABLE ACM IN PUBLIC SCHOOLS,

IDENTIFICATION AND NOTIFICATION, published in FEDERAL REGISTER, 40 CFR PART 763, MAY 27, 1982, as well as the ASBESTOS HAZARD EMERGENCY RESPONSE ACT (AHERA) OF 1987. However, for this project these reference documents were used as guidelines only and the asbestos observations were not designed to be comprehensive in nature. The intent of these observations was to identify the potential sources of asbestos materials commonly encountered in commercial real estate.

9.3 Conflict Certification

Avalon Environmental Consultants has no present or contemplated future ownership interest or financial interest in the real estate that is the subject of this Environmental Assessment Report; and Avalon Environmental Consultants has no personal interest with respect to the subject matter of the Environmental Assessment Report or the parties involved, and Avalon Environmental Consultants has no relationship with the property or the owners thereof which would prevent an independent analysis of the environmental or other conditions of the property.

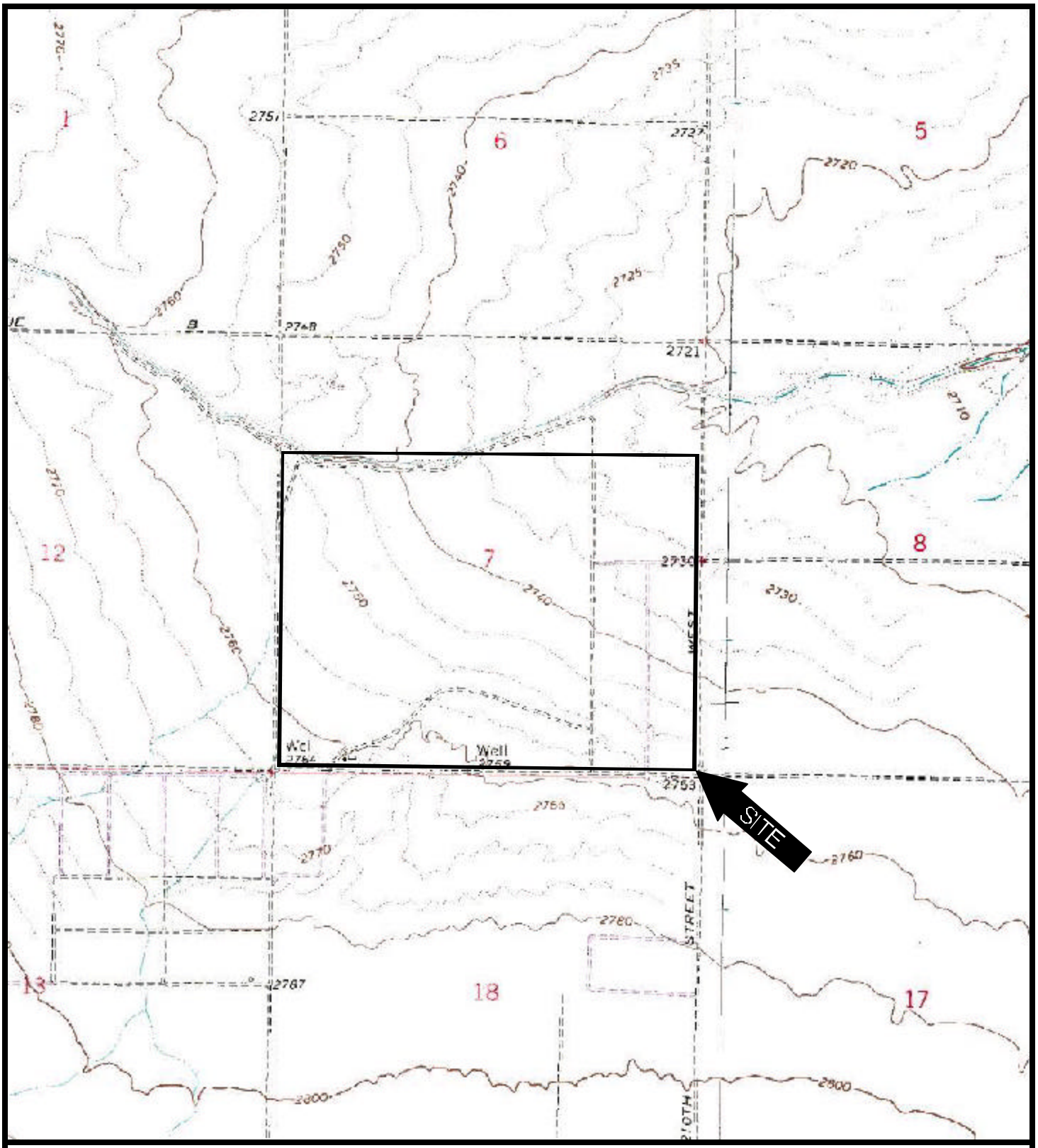
9.4 Declarations

I, Mohammad Navid, declare that, to the best of my professional knowledge and belief, I, meet the definition of Environmental Professional as defined in § 312.10 of 40 CFR Part 312, and have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed all the appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

APPENDICES

APPENDIX I

MAPS

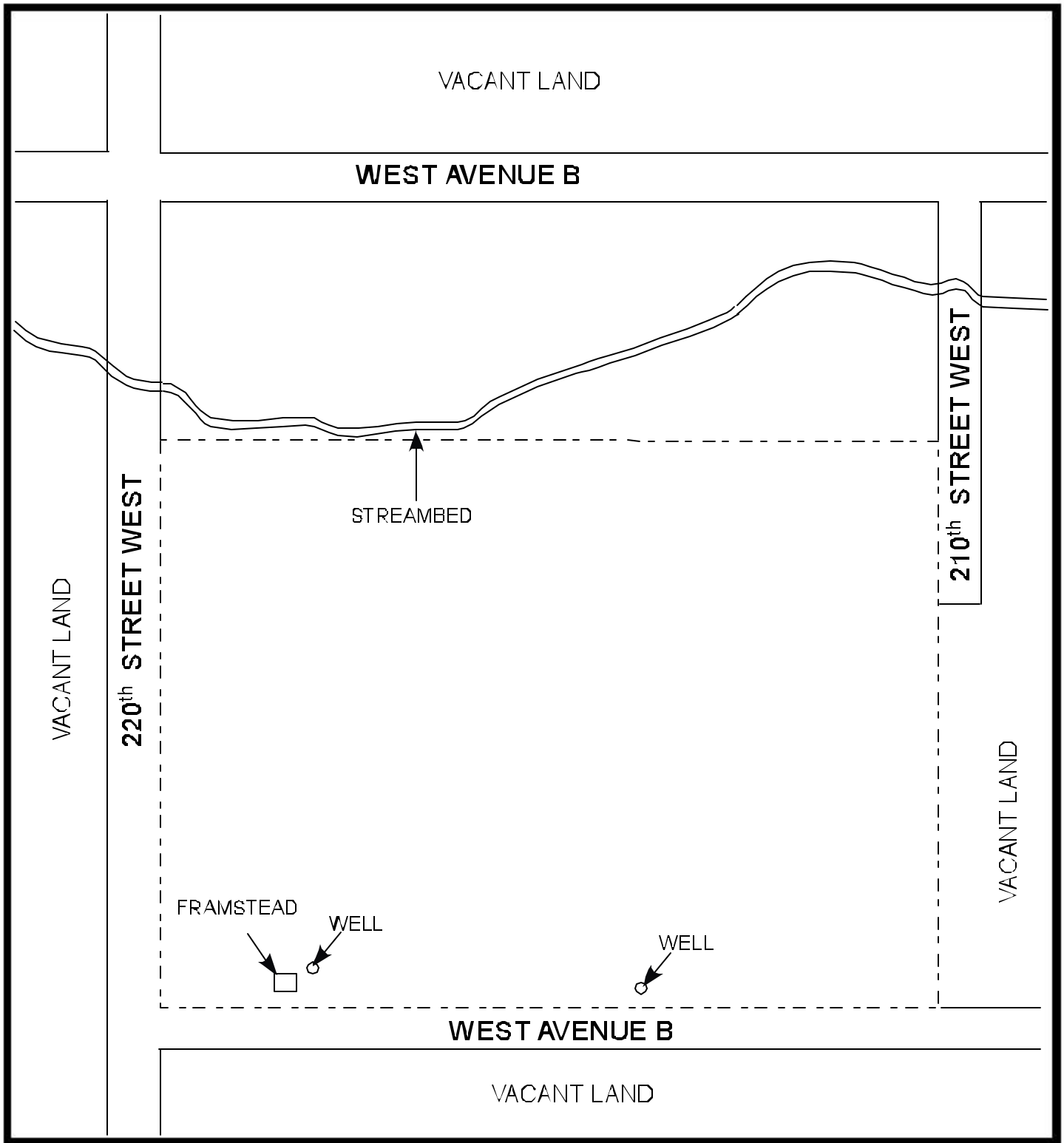


TOPOGRAPHY AND SITE LOCATION MAP

AVALON ENVIRONMENTAL CONSULTANTS
TUSTIN, CALIFORNIA

Source:
U.S.G.S., 7.5 Minute Series Topographic Maps: Neenach School Quad, California, 1995

N



SITE LOCATION MAP

N

Site Address:	220TH Street West & West Ave. B	Client Name:	Alta Vista Suntower, LLC.
Site City/State:	Los Angeles County, California	Project No.:	0620-685-1

AVALON ENVIRONMENTAL CONSULTANTS, INC.
TUSTIN, CALIFORNIA

NOT TO SCALE

FIGURE 2

APPENDIX II

SCOPE OF WORK

Objectives and Scope of Work

The objective of the Phase I ESA is to provide a report that describes current site conditions as well as identify areas of potential concern regarding environmental liabilities.

The scope of work will include the following:

1. Visual examination of the subject property (walk-through of entire property.)
2. Determination of the current activities at the site.
3. Identification of all hazardous materials used on-site and wastes produced.
4. Review site history.
5. Review existing reports and regulatory agency correspondence.
6. Conclusion regarding the environmental condition of the site.

The Phase I ESA will be performed in accordance with **ASTM Standard Practice E1527-05** Guidance.

Methodology

A. Information Review

Four of the following resources will be used, as applicable, for this property to prepare the conclusions and recommendations of this report.

- Regulatory data base government records review on sites within a one mile radius of the subject property. This includes the US Environmental Protection Agency's National Priority List sites and state Superfund sites. A search of public records for permitted or suspected underground storage tank (UST) facilities. Leaking Underground Storage Tank sites (LUST). RCRA and CERCLA related site listings, federal and state landfill sites and other environmental issues within a one half mile radius,
- Review geologic and hydro-geologic data for the area,
- Review existing geologic and environmental reports for the subject property,
- Review of historic fire insurance maps, if available,
- Review of historic aerial photographs, if available,
- Review of historic city directory, if available, and
- Review of building permits, if available.

B. Site Inspection

The site inspection will include visual observations of the following:

- On-site chemical storage and use.
- Evidence of spills.
- Presence, potential, evidence of above ground/underground tank.
- Presence of potential asbestos containing materials.
- Adjacent property use.
- Surface soil appearance, potential risk or impact.
- Odors.
- Solid waste management.
- Potential for on-site/off-site releases; vapors, liquids, solids and potential risk to groundwater.

C. Reporting

Following completion of the information review and site visit, all information and data will be assessed and a report will be prepared describing the environmental condition of the site. Any need for an additional Phase II Environmental Site Assessment will be described and preliminary cost estimates for this work will be presented.

APPENDIX III

USER QUESTIONNAIRE

Avalon Environmental Consultants User Questionnaire

1. LOAN APPLICANT/BORROWER:
   Name: _____
   Street Address: NONE
   City: _____ State: _____ Zip: _____
   Phone: _____

2. CURRENT PROPERTY OWNER: Various
   Name: Alta Vista Sub tower, LLC
   Street Address: 130 W. Union Street
   City: Pasadena State: CA Zip: 91103
   Phone: (626) 685-1810

3. CURRENT PROPERTY TENANT(S):
   Name: NONE
   Street Address: _____
   City: _____ State: _____ Zip: _____
   Phone: _____

4. PROPERTY LOCATION:
   Street Address: _____
   City: _____ State: _____ Zip: _____
   County: _____ Section, Township, Range: _____

AVALON ENVIRONMENTAL CONSULTANTS	Yes	No
(1.) Environmental cleanup liens that are filed or recorded against the site (40 CFR 312.25) Are you aware of any environmental cleanup liens against the property that are filed or recorded under federal, tribal, state or local law?		X
(2.) Activity and land use limitations that are in place on the site or that have been filed or recorded in a registry (40 CFR 312.26) Are you aware of any Activity and Use Limitations (AULs), such as engineering controls, land use restrictions or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law?		X
(3.) Specialized knowledge or experience of the person seeking to qualify for the Landowner Liability Protection (LLP) (40 CFR 312.28) As the user of this ESA do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?		X
(4.) Relationship of the purchase price of the fair market value of the property if it were not contaminated (40 CFR 312.29) Does the purchase price being paid for this property reasonably reflect the fair market value of the property? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the property?		X

AVALON ENVIRONMENTAL CONSULTANTS	Yes	No
(5.) Commonly known or reasonably ascertainable information about the property (40 CFR 312.30) Are you aware of commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example, as user, A. Do you know the past uses of the property?		
B. Do you know of specific chemicals that are present or once were present at the property?		X
C. Do you know of spills or other chemical releases that have taken place at the property?		
D. Do you know of any environmental cleanups that have taken place at the property?		
(6.) The degree of obviousness of the presence of likely presence of contamination at the property, and the ability to detect the contamination by appropriate investigation (40 CFR 312.31) As the user of this ESA, based on your knowledge and experience related to the property are there any obvious indicators that point to the presence or likely presence of contamination at the property?		X

Attach and/or include copies of all reports, findings, notifications, investigative studies or other clarifying comments relative to any question answered with Yes or needing further explanation.

Preparer represents that to the best of his/her knowledge the above statements and facts are true and correct and no material facts have been suppressed or misstated. The questionnaire was completed by:

Name: Michael Bass

Signature

Date: 5/8/08

APPENDIX IV

RADIUS REPORT

Alta Vista
21215 220th Street West
Lancaster, CA 93536

Inquiry Number: 2221972.2s
May 16, 2008

The EDR Radius Map™ Report with GeoCheck®

Prepared using the EDR FieldCheck® System

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION	PAGE
Executive Summary	ES1
Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	6
Orphan Summary	7
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting SSURGO Soil Map	A-5
Physical Setting Source Map	A-10
Physical Setting Source Map Findings	A-11
Physical Setting Source Records Searched	A-17

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

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EXECUTIVE SUMMARY

A search of the environmental records was conducted by Environmental Data Resources, Inc. (EDR). AVALON ENV. CONSULTANTS used the EDR FieldCheck System to review and/or revise the results of this search, based on independent data verification by AVALON ENV. CONSULTANTS. The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

21215 220TH STREET WEST
LANCASTER, CA 93536

COORDINATES

Latitude (North):	34.796680 - 34˚ 47' 48.0''
Longitude (West):	118.511570 - 118˚ 30' 41.7''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	361717.6
UTM Y (Meters):	3851340.2
Elevation:	2742 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	34118-G5 NEENACH SCHOOL, CA
Most Recent Revision:	1974
East Map:	34118-G4 FAIRMONT BUTTE, CA
Most Recent Revision:	1974

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No sites were identified in following databases.

FEDERAL RECORDS

NPL ..... National Priority List
Proposed NPL ..... Proposed National Priority List Sites
Delisted NPL ..... National Priority List Deletions
NPL LIENS ..... Federal Superfund Liens
CERCLIS ..... Comprehensive Environmental Response, Compensation, and Liability Information System
CERC-NFRAP ..... CERCLIS No Further Remedial Action Planned
LIENS 2 ..... CERCLA Lien Information
CORRACTS ..... Corrective Action Report

EXECUTIVE SUMMARY

RCRA-TSDF	RCRA - Transporters, Storage and Disposal
RCRA-LQG	RCRA - Large Quantity Generators
RCRA-SQG	RCRA - Small Quantity Generators
RCRA-CESQG	RCRA - Conditionally Exempt Small Quantity Generator
RCRA-NonGen	RCRA - Non Generators
US ENG CONTROLS	Engineering Controls Sites List
US INST CONTROL	Sites with Institutional Controls
ERNS	Emergency Response Notification System
HMIRS	Hazardous Materials Information Reporting System
DOT OPS	Incident and Accident Data
US CDL	Clandestine Drug Labs
US BROWNFIELDS	A Listing of Brownfields Sites
DOD	Department of Defense Sites
FUDS	Formerly Used Defense Sites
LUCIS	Land Use Control Information System
CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
ODI	Open Dump Inventory
DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations
MINES	Mines Master Index File
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
SSTS	Section 7 Tracking Systems
ICIS	Integrated Compliance Information System
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
RADINFO	Radiation Information Database
FINDS	Facility Index System/Facility Registry System
RAATS	RCRA Administrative Action Tracking System

STATE AND LOCAL RECORDS

HIST Cal-Sites	Historical Calsites Database
CA BOND EXP. PLAN	Bond Expenditure Plan
SCH	School Property Evaluation Program
Toxic Pits	Toxic Pits Cleanup Act Sites
SWF/LF	Solid Waste Information System
CA WDS	Waste Discharge System
WMUDS/SWAT	Waste Management Unit Database
Cortese	"Cortese" Hazardous Waste & Substances Sites List
SWRCY	Recycler Database
LUST	Geotracker's Leaking Underground Fuel Tank Report
CA FID UST	Facility Inventory Database
SLIC	Statewide SLIC Cases
AOCONCERN	San Gabriel Valley Areas of Concern
UST	Active UST Facilities
HIST UST	Hazardous Substance Storage Container Database
AST	Aboveground Petroleum Storage Tank Facilities
LIENS	Environmental Liens Listing
SWEEPS UST	SWEEPS UST Listing
CHMIRS	California Hazardous Material Incident Report System

EXECUTIVE SUMMARY

Notify 65 ..... Proposition 65 Records
LA Co. Site Mitigation ..... Site Mitigation List
DEED ..... Deed Restriction Listing
VCP ..... Voluntary Cleanup Program Properties
DRYCLEANERS ..... Cleaner Facilities
WIP ..... Well Investigation Program Case List
LOS ANGELES CO. HMS ..... HMS: Street Number List
CDL ..... Clandestine Drug Labs
RESPONSE ..... State Response Sites
HAZNET ..... Facility and Manifest Data
AIRS ..... Emissions Inventory Data
HAULERS ..... Registered Waste Tire Haulers Listing
ENVIROSTOR ..... EnviroStor Database

TRIBAL RECORDS

INDIAN RESERV ..... Indian Reservations
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands
INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land
INDIAN UST ..... Underground Storage Tanks on Indian Land

EDR PROPRIETARY RECORDS

Manufactured Gas Plants ..... EDR Proprietary Manufactured Gas Plants
EDR Historical Auto Stations ..... EDR Proprietary Historic Gas Stations
EDR Historical Cleaners ..... EDR Proprietary Historic Dry Cleaners

SURROUNDING SITES: SEARCH RESULTS

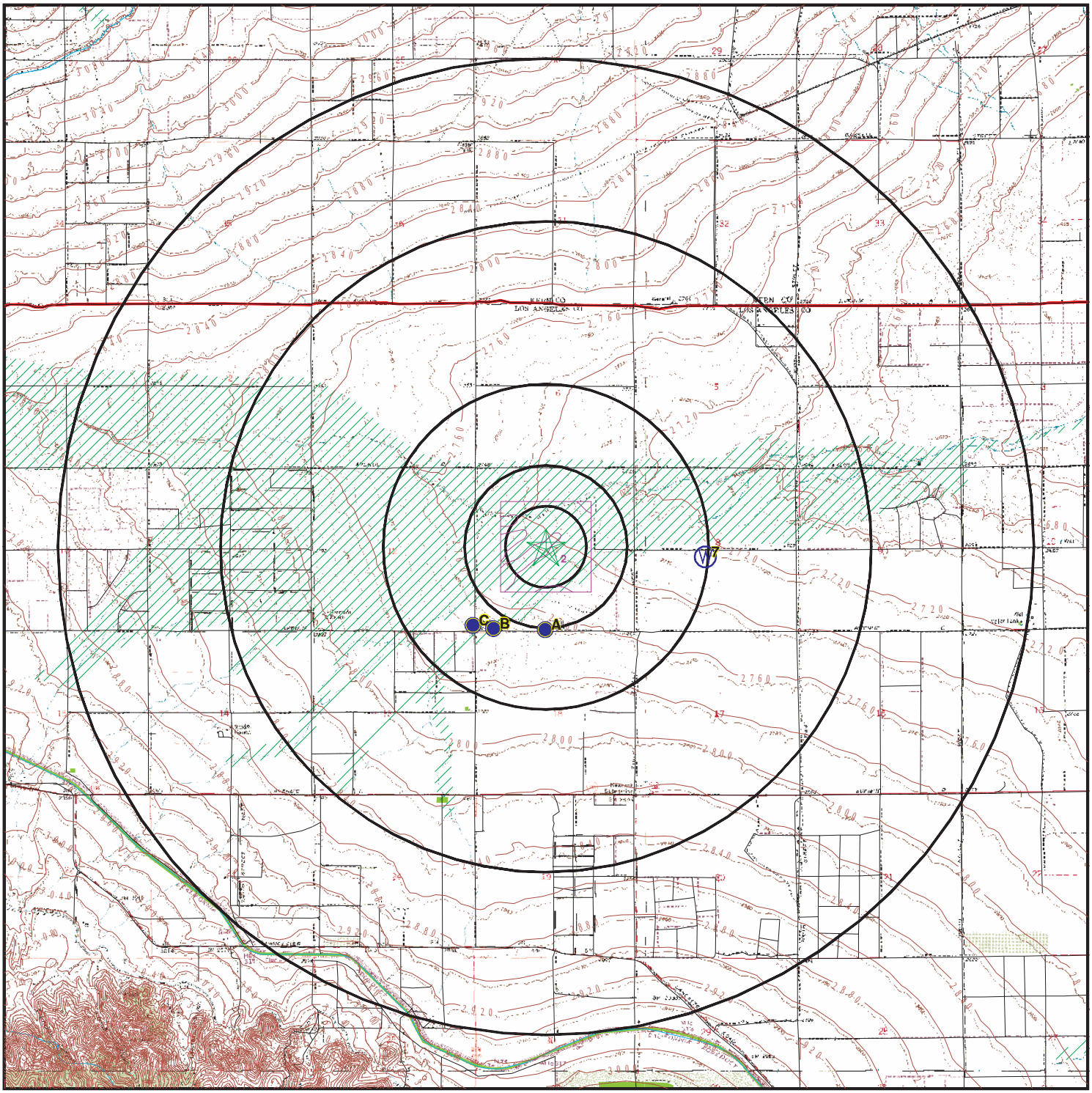
Surrounding sites were not identified.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:
There were no unmapped sites in this report.

OVERVIEW MAP - 2221972.2s



0 3/4 1 1/2 3 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- County Boundary
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Alta Vista	CLIENT: Avalon Env. Consultants
ADDRESS: 21215 220th Street West Lancaster CA 93536	CONTACT: Moe Navid
LAT/LONG: 34.7967 / 118.5116	INQUIRY #: 2221972.2s
	DATE: May 16, 2008 7:23 pm

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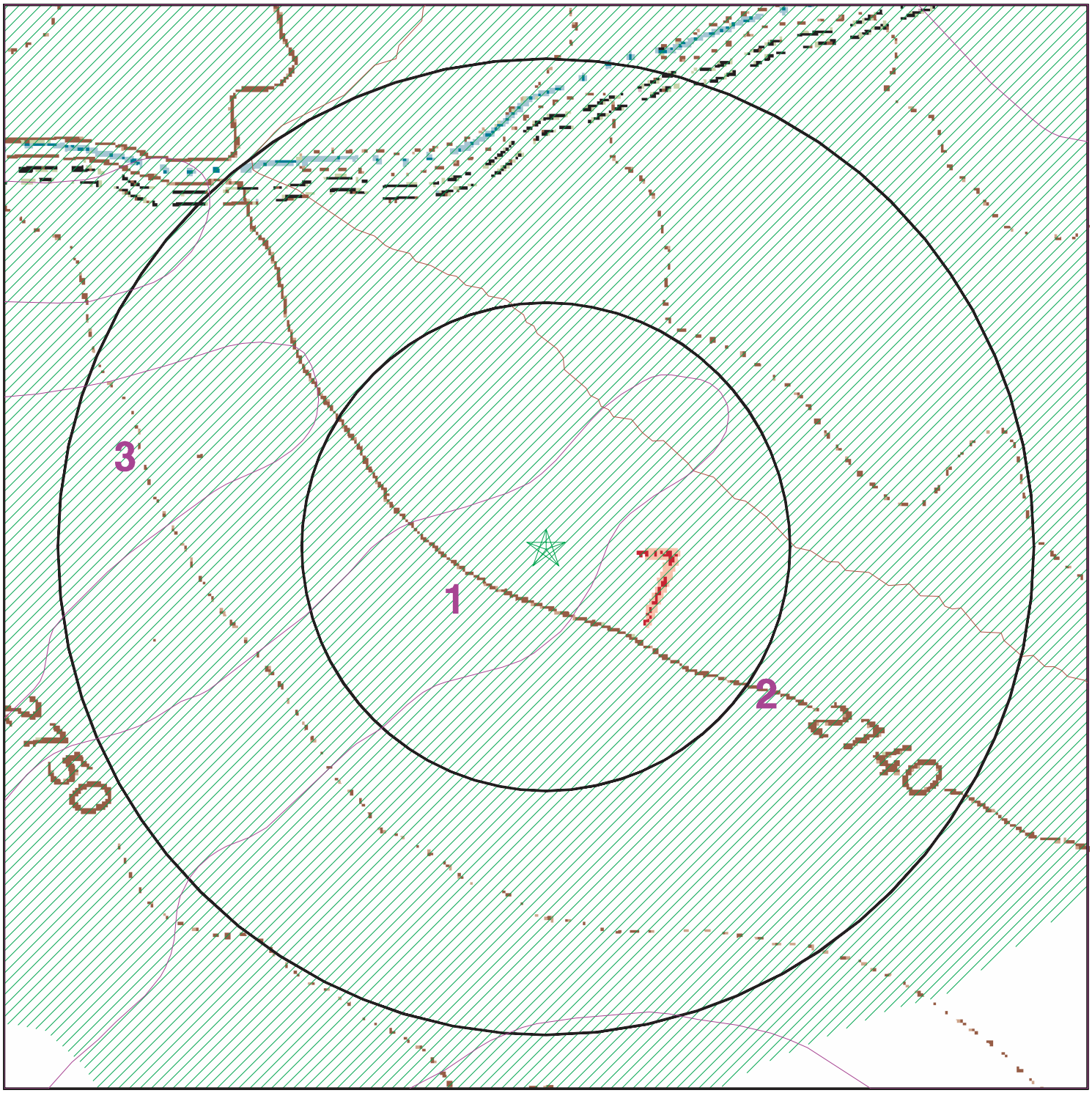
DETAIL MAP - 2221972.2s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Alta Vista	CLIENT: Avalon Env. Consultants
ADDRESS: 21215 220th Street West Lancaster CA 93536	CONTACT: Moe Navid INQUIRY #: 2221972.2s
LAT/LONG: 34.7967 / 118.5116	DATE: May 16, 2008 7:23 pm

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
FEDERAL RECORDS								
NPL		2.500	0	0	0	0	0	0
Proposed NPL		2.500	0	0	0	0	0	0
Delisted NPL		2.500	0	0	0	0	0	0
NPL LIENS		1.500	0	0	0	0	0	0
CERCLIS		2.000	0	0	0	0	0	0
CERC-NFRAP		2.000	0	0	0	0	0	0
LIENS 2		1.500	0	0	0	0	0	0
CORRACTS		2.500	0	0	0	0	0	0
RCRA-TSDF		2.000	0	0	0	0	0	0
RCRA-LQG		1.750	0	0	0	0	0	0
RCRA-SQG		1.750	0	0	0	0	0	0
RCRA-CESQG		1.750	0	0	0	0	0	0
RCRA-NonGen		1.750	0	0	0	0	0	0
US ENG CONTROLS		2.000	0	0	0	0	0	0
US INST CONTROL		2.000	0	0	0	0	0	0
ERNS		1.500	0	0	0	0	0	0
HMIRS		1.500	0	0	0	0	0	0
DOT OPS		1.500	0	0	0	0	0	0
US CDL		1.500	0	0	0	0	0	0
US BROWNFIELDS		2.000	0	0	0	0	0	0
DOD		2.500	0	0	0	0	0	0
FUDS		2.500	0	0	0	0	0	0
LUCIS		2.000	0	0	0	0	0	0
CONSENT		2.500	0	0	0	0	0	0
ROD		2.500	0	0	0	0	0	0
UMTRA		2.000	0	0	0	0	0	0
ODI		2.000	0	0	0	0	0	0
DEBRIS REGION 9		2.000	0	0	0	0	0	0
MINES		1.750	0	0	0	0	0	0
TRIS		1.500	0	0	0	0	0	0
TSCA		1.500	0	0	0	0	0	0
FTTS		1.500	0	0	0	0	0	0
HIST FTTS		1.500	0	0	0	0	0	0
SSTS		1.500	0	0	0	0	0	0
ICIS		1.500	0	0	0	0	0	0
PADS		1.500	0	0	0	0	0	0
MLTS		1.500	0	0	0	0	0	0
RADINFO		1.500	0	0	0	0	0	0
FINDS		1.500	0	0	0	0	0	0
RAATS		1.500	0	0	0	0	0	0
STATE AND LOCAL RECORDS								
HIST Cal-Sites		2.500	0	0	0	0	0	0
CA BOND EXP. PLAN		2.500	0	0	0	0	0	0
SCH		1.750	0	0	0	0	0	0
Toxic Pits		2.500	0	0	0	0	0	0
SWF/LF		2.000	0	0	0	0	0	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CA WDS		1.500	0	0	0	0	0	0
WMUDS/SWAT		2.000	0	0	0	0	0	0
Cortese		2.000	0	0	0	0	0	0
SWRCY		2.000	0	0	0	0	0	0
LUST		2.000	0	0	0	0	0	0
CA FID UST		1.750	0	0	0	0	0	0
SLIC		2.000	0	0	0	0	0	0
AOCONCERN		2.500	0	0	0	0	0	0
UST		1.750	0	0	0	0	0	0
HIST UST		1.750	0	0	0	0	0	0
AST		1.750	0	0	0	0	0	0
LIENS		1.500	0	0	0	0	0	0
SWEEPS UST		1.750	0	0	0	0	0	0
CHMIRS		1.500	0	0	0	0	0	0
Notify 65		2.500	0	0	0	0	0	0
LA Co. Site Mitigation		1.500	0	0	0	0	0	0
DEED		2.000	0	0	0	0	0	0
VCP		2.000	0	0	0	0	0	0
DRYCLEANERS		1.750	0	0	0	0	0	0
WIP		1.750	0	0	0	0	0	0
LOS ANGELES CO. HMS		1.500	0	0	0	0	0	0
CDL		1.500	0	0	0	0	0	0
RESPONSE		2.500	0	0	0	0	0	0
HAZNET		1.500	0	0	0	0	0	0
AIRS		1.500	0	0	0	0	0	0
HAULERS		1.500	0	0	0	0	0	0
ENVIROSTOR		2.500	0	0	0	0	0	0
TRIBAL RECORDS								
INDIAN RESERV		2.500	0	0	0	0	0	0
INDIAN ODI		2.000	0	0	0	0	0	0
INDIAN LUST		2.000	0	0	0	0	0	0
INDIAN UST		1.750	0	0	0	0	0	0
EDR PROPRIETARY RECORDS								
Manufactured Gas Plants		2.500	0	0	0	0	0	0
EDR Historical Auto Stations		1.750	0	0	0	0	0	0
EDR Historical Cleaners		1.750	0	0	0	0	0	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

NO SITES FOUND

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
		NO SITES FOUND			

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

FEDERAL RECORDS

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 01/31/2008
Date Data Arrived at EDR: 02/08/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 38

Source: EPA
Telephone: N/A
Last EDR Contact: 04/28/2008
Next Scheduled EDR Contact: 07/28/2008
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 01/31/2008
Date Data Arrived at EDR: 02/04/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 42

Source: EPA
Telephone: N/A
Last EDR Contact: 04/28/2008
Next Scheduled EDR Contact: 07/28/2008
Data Release Frequency: Quarterly

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 01/31/2008
Date Data Arrived at EDR: 02/08/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 38

Source: EPA
Telephone: N/A
Last EDR Contact: 04/28/2008
Next Scheduled EDR Contact: 07/28/2008
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 02/19/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: No Update Planned

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 01/09/2008
Date Data Arrived at EDR: 02/05/2008
Date Made Active in Reports: 02/20/2008
Number of Days to Update: 15

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 04/25/2008
Next Scheduled EDR Contact: 06/16/2008
Data Release Frequency: Quarterly

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 12/03/2007
Date Data Arrived at EDR: 12/06/2007
Date Made Active in Reports: 02/20/2008
Number of Days to Update: 76

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 03/17/2008
Next Scheduled EDR Contact: 06/16/2008
Data Release Frequency: Quarterly

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/08/2008
Date Data Arrived at EDR: 03/07/2008
Date Made Active in Reports: 03/20/2008
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/26/2008
Date Data Arrived at EDR: 04/02/2008
Date Made Active in Reports: 05/06/2008
Number of Days to Update: 34

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: Quarterly

RCRA-TSDF: RCRA - Transporters, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/06/2008
Date Data Arrived at EDR: 03/06/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 43

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/06/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/06/2008
Date Data Arrived at EDR: 03/06/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 43

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/06/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/06/2008
Date Data Arrived at EDR: 03/06/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 43

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/06/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/06/2008
Date Data Arrived at EDR: 03/06/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 43

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/06/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/06/2008
Date Data Arrived at EDR: 03/06/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 43

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/06/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 04/04/2008
Date Data Arrived at EDR: 04/17/2008
Date Made Active in Reports: 05/15/2008
Number of Days to Update: 28

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/31/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 04/04/2008
Date Data Arrived at EDR: 04/17/2008
Date Made Active in Reports: 05/15/2008
Number of Days to Update: 28

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/31/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Varies

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 01/23/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 54

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 04/22/2008
Next Scheduled EDR Contact: 07/21/2008
Data Release Frequency: Annually

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 04/16/2008
Date Made Active in Reports: 05/15/2008
Number of Days to Update: 29

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 04/16/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: Annually

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 02/14/2008
Date Data Arrived at EDR: 02/27/2008
Date Made Active in Reports: 03/20/2008
Number of Days to Update: 22

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 02/27/2008
Next Scheduled EDR Contact: 05/26/2008
Data Release Frequency: Varies

CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 12/28/2007
Number of Days to Update: 25

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/28/2008
Next Scheduled EDR Contact: 06/23/2008
Data Release Frequency: Quarterly

US BROWNFIELDS: A Listing of Brownfields Sites

Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 01/03/2008
Date Data Arrived at EDR: 01/17/2008
Date Made Active in Reports: 02/20/2008
Number of Days to Update: 34

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 04/30/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: Semi-Annually

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 703-692-8801
Last EDR Contact: 05/09/2008
Next Scheduled EDR Contact: 08/04/2008
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 08/31/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 41

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 04/03/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 03/10/2008
Next Scheduled EDR Contact: 06/09/2008
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 12/28/2007
Number of Days to Update: 25

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/22/2008
Next Scheduled EDR Contact: 07/21/2008
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 01/14/2008
Date Data Arrived at EDR: 01/22/2008
Date Made Active in Reports: 01/30/2008
Number of Days to Update: 8

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/31/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 07/13/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 03/17/2008
Next Scheduled EDR Contact: 06/16/2008
Data Release Frequency: Varies

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 03/25/2008
Date Data Arrived at EDR: 04/17/2008
Date Made Active in Reports: 05/15/2008
Number of Days to Update: 28

Source: EPA, Region 9
Telephone: 415-972-3336
Last EDR Contact: 03/24/2008
Next Scheduled EDR Contact: 06/23/2008
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/07/2008
Date Data Arrived at EDR: 03/26/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 23

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 03/26/2008
Next Scheduled EDR Contact: 06/23/2008
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 02/29/2008
Next Scheduled EDR Contact: 06/16/2008
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2002
Date Data Arrived at EDR: 04/14/2006
Date Made Active in Reports: 05/30/2006
Number of Days to Update: 46

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 04/28/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/22/2008
Date Made Active in Reports: 01/30/2008
Number of Days to Update: 8

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 03/17/2008
Next Scheduled EDR Contact: 06/16/2008
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/22/2008
Date Made Active in Reports: 01/30/2008
Number of Days to Update: 8

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 03/17/2008
Next Scheduled EDR Contact: 06/16/2008
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 03/14/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/14/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 02/28/2008
Date Data Arrived at EDR: 03/18/2008
Date Made Active in Reports: 05/06/2008
Number of Days to Update: 49

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 04/14/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 12/04/2007
Date Data Arrived at EDR: 02/07/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 39

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 05/09/2008
Next Scheduled EDR Contact: 08/04/2008
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 02/07/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 39

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 03/31/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/29/2008
Date Data Arrived at EDR: 01/31/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 46

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 05/01/2008
Next Scheduled EDR Contact: 07/28/2008
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/08/2008
Date Made Active in Reports: 05/06/2008
Number of Days to Update: 28

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 03/31/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 03/06/2007
Date Made Active in Reports: 04/13/2007
Number of Days to Update: 38

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 03/13/2008
Next Scheduled EDR Contact: 06/09/2008
Data Release Frequency: Biennially

STATE AND LOCAL RECORDS

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/25/2008
Next Scheduled EDR Contact: 05/26/2008
Data Release Frequency: No Update Planned

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 02/26/2008
Date Data Arrived at EDR: 02/27/2008
Date Made Active in Reports: 03/27/2008
Number of Days to Update: 29

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/27/2008
Next Scheduled EDR Contact: 02/25/2008
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 04/28/2008
Next Scheduled EDR Contact: 07/28/2008
Data Release Frequency: No Update Planned

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 03/10/2008
Date Data Arrived at EDR: 03/12/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 33

Source: Integrated Waste Management Board
Telephone: 916-341-6320
Last EDR Contact: 03/12/2008
Next Scheduled EDR Contact: 06/09/2008
Data Release Frequency: Quarterly

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: Quarterly

CA WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 03/17/2008
Next Scheduled EDR Contact: 06/16/2008
Data Release Frequency: Quarterly

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites). This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 05/29/2001
Date Made Active in Reports: 07/26/2001
Number of Days to Update: 58

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 04/21/2008
Next Scheduled EDR Contact: 07/21/2008
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 04/07/2008
Date Data Arrived at EDR: 04/09/2008
Date Made Active in Reports: 05/06/2008
Number of Days to Update: 27

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 04/09/2008
Next Scheduled EDR Contact: 07/07/2008
Data Release Frequency: Quarterly

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 04/14/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 05/05/2008
Next Scheduled EDR Contact: 08/04/2008
Data Release Frequency: Varies

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 03/31/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 04/01/2008
Date Data Arrived at EDR: 04/23/2008
Date Made Active in Reports: 05/06/2008
Number of Days to Update: 13

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 04/23/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Quarterly

LUST REG 4: Underground Storage Tank Leak List
Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 03/24/2008
Next Scheduled EDR Contact: 06/23/2008
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 05/12/2008
Next Scheduled EDR Contact: 08/11/2008
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List
Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 04/07/2008
Next Scheduled EDR Contact: 07/07/2008
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 02/19/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 04/08/2008
Date Data Arrived at EDR: 04/09/2008
Date Made Active in Reports: 05/06/2008
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 04/09/2008
Next Scheduled EDR Contact: 07/07/2008
Data Release Frequency: Quarterly

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 02/19/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: No Update Planned

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SLIC: Statewide SLIC Cases
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/08/2008
Date Data Arrived at EDR: 04/09/2008
Date Made Active in Reports: 05/06/2008
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 01/09/2008
Next Scheduled EDR Contact: 07/07/2008
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 02/19/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 04/07/2008
Next Scheduled EDR Contact: 04/07/2008
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 05/12/2008
Next Scheduled EDR Contact: 08/11/2008
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 04/21/2008
Next Scheduled EDR Contact: 07/21/2008
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 03/31/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 03/31/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 03/31/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 02/25/2008
Next Scheduled EDR Contact: 05/26/2008
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 04/08/2008
Date Data Arrived at EDR: 04/09/2008
Date Made Active in Reports: 05/01/2008
Number of Days to Update: 22

Source: SWRCB
Telephone: 916-480-1028
Last EDR Contact: 04/09/2008
Next Scheduled EDR Contact: 07/07/2008
Data Release Frequency: Semi-Annually

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 03/24/2008
Date Data Arrived at EDR: 03/25/2008
Date Made Active in Reports: 04/09/2008
Number of Days to Update: 15

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 03/24/2008
Next Scheduled EDR Contact: 06/23/2008
Data Release Frequency: Varies

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 02/05/2008
Date Data Arrived at EDR: 02/06/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 37

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/05/2008
Next Scheduled EDR Contact: 08/04/2008
Data Release Frequency: Varies

AST: Aboveground Petroleum Storage Tank Facilities
Registered Aboveground Storage Tanks.

Date of Government Version: 11/01/2007
Date Data Arrived at EDR: 11/27/2007
Date Made Active in Reports: 02/14/2008
Number of Days to Update: 79

Source: State Water Resources Control Board
Telephone: 916-341-5712
Last EDR Contact: 04/28/2008
Next Scheduled EDR Contact: 07/28/2008
Data Release Frequency: Quarterly

SWEEPS UST: SWEEPS UST Listing
Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CHMIRS: California Hazardous Material Incident Report System
California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/23/2007
Date Made Active in Reports: 04/06/2007
Number of Days to Update: 42

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 05/02/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

NOTIFY 65: Proposition 65 Records

Proposition 65 Notification Records. NOTIFY 65 contains facility notifications about any release which could impact drinking water and thereby expose the public to a potential health risk.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 04/14/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: No Update Planned

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 04/01/2008
Date Data Arrived at EDR: 04/02/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 12

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/02/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Semi-Annually

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 02/26/2008
Date Data Arrived at EDR: 02/27/2008
Date Made Active in Reports: 03/27/2008
Number of Days to Update: 29

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/27/2008
Next Scheduled EDR Contact: 05/26/2008
Data Release Frequency: Quarterly

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 07/31/2007
Date Data Arrived at EDR: 07/31/2007
Date Made Active in Reports: 08/09/2007
Number of Days to Update: 9

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 05/12/2008
Next Scheduled EDR Contact: 08/11/2008
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 02/26/2008
Date Data Arrived at EDR: 04/23/2008
Date Made Active in Reports: 05/06/2008
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 04/23/2008
Next Scheduled EDR Contact: 07/21/2008
Data Release Frequency: Varies

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/06/2008
Number of Days to Update: 14

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/21/2008
Next Scheduled EDR Contact: 07/21/2008
Data Release Frequency: Varies

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 02/26/2008
Date Data Arrived at EDR: 02/27/2008
Date Made Active in Reports: 03/27/2008
Number of Days to Update: 29

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/27/2008
Next Scheduled EDR Contact: 05/26/2008
Data Release Frequency: Quarterly

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 10/04/2007
Date Made Active in Reports: 11/07/2007
Number of Days to Update: 34

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 05/09/2008
Next Scheduled EDR Contact: 08/04/2008
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 04/17/2007
Date Made Active in Reports: 05/10/2007
Number of Days to Update: 23

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 04/18/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: Varies

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 02/26/2008
Date Data Arrived at EDR: 02/27/2008
Date Made Active in Reports: 03/27/2008
Number of Days to Update: 29

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/27/2008
Next Scheduled EDR Contact: 05/26/2008
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 04/28/2008
Date Data Arrived at EDR: 04/29/2008
Date Made Active in Reports: 05/06/2008
Number of Days to Update: 7

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 04/28/2008
Next Scheduled EDR Contact: 06/09/2008
Data Release Frequency: Varies

TRIBAL RECORDS

INDIAN RESERV: Indian Reservations
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 05/09/2008
Next Scheduled EDR Contact: 08/04/2008
Data Release Frequency: Semi-Annually

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 02/25/2008
Next Scheduled EDR Contact: 05/26/2008
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 03/17/2008
Date Data Arrived at EDR: 03/27/2008
Date Made Active in Reports: 05/06/2008
Number of Days to Update: 40

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 02/20/2008
Date Data Arrived at EDR: 03/04/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 13

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 03/12/2008
Date Data Arrived at EDR: 03/14/2008
Date Made Active in Reports: 03/20/2008
Number of Days to Update: 6

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 02/28/2008
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 17

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 02/25/2008
Date Data Arrived at EDR: 02/26/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 20

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/21/2008
Date Data Arrived at EDR: 02/26/2008
Date Made Active in Reports: 03/20/2008
Number of Days to Update: 23

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 03/17/2008
Date Data Arrived at EDR: 03/27/2008
Date Made Active in Reports: 05/06/2008
Number of Days to Update: 40

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land
A listing of underground storage tank locations on Indian Land.

Date of Government Version: 03/12/2008
Date Data Arrived at EDR: 03/14/2008
Date Made Active in Reports: 03/20/2008
Number of Days to Update: 6

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
No description is available for this data

Date of Government Version: 02/28/2008
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 17

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Semi-Annually

INDIAN UST R7: Underground Storage Tanks on Indian Land
No description is available for this data

Date of Government Version: 06/01/2007
Date Data Arrived at EDR: 06/14/2007
Date Made Active in Reports: 07/05/2007
Number of Days to Update: 21

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land
No description is available for this data

Date of Government Version: 02/25/2008
Date Data Arrived at EDR: 02/26/2008
Date Made Active in Reports: 03/20/2008
Number of Days to Update: 23

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

INDIAN UST R4: Underground Storage Tanks on Indian Land
No description is available for this data

Date of Government Version: 03/17/2008
Date Data Arrived at EDR: 03/27/2008
Date Made Active in Reports: 05/06/2008
Number of Days to Update: 40

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land
No description is available for this data

Date of Government Version: 12/21/2007
Date Data Arrived at EDR: 12/21/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 34

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 12/21/2007
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land
No description is available for this data

Date of Government Version: 02/21/2008
Date Data Arrived at EDR: 02/26/2008
Date Made Active in Reports: 03/20/2008
Number of Days to Update: 23

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
No description is available for this data

Date of Government Version: 02/20/2008
Date Data Arrived at EDR: 03/04/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 13

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

EDR PROPRIETARY RECORDS

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Historical Auto Stations: EDR Proprietary Historic Gas Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Historical Cleaners: EDR Proprietary Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/28/2008
Date Data Arrived at EDR: 01/29/2008
Date Made Active in Reports: 02/14/2008
Number of Days to Update: 16

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 05/05/2008
Next Scheduled EDR Contact: 07/21/2008
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 01/28/2008
Date Data Arrived at EDR: 01/29/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 10

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 05/05/2008
Next Scheduled EDR Contact: 07/21/2008
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 03/07/2008
Date Data Arrived at EDR: 03/11/2008
Date Made Active in Reports: 03/27/2008
Number of Days to Update: 16

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 02/25/2008
Next Scheduled EDR Contact: 05/26/2008
Data Release Frequency: Semi-Annually

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 03/31/2008
Date Data Arrived at EDR: 04/18/2008
Date Made Active in Reports: 05/06/2008
Number of Days to Update: 18

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 04/18/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: Semi-Annually

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing

Kern County Sites and Tanks Listing.

Date of Government Version: 04/01/2008
Date Data Arrived at EDR: 04/18/2008
Date Made Active in Reports: 05/01/2008
Number of Days to Update: 13

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 04/16/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: Quarterly

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern

San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 07/07/1999
Date Made Active in Reports: N/A
Number of Days to Update: 0

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 04/14/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: No Update Planned

HMS: Street Number List

Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 02/28/2008
Date Data Arrived at EDR: 04/16/2008
Date Made Active in Reports: 05/06/2008
Number of Days to Update: 20

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 05/12/2008
Next Scheduled EDR Contact: 08/11/2008
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities

Solid Waste Facilities in Los Angeles County.

Date of Government Version: 02/12/2008
Date Data Arrived at EDR: 02/21/2008
Date Made Active in Reports: 03/27/2008
Number of Days to Update: 35

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 05/14/2008
Next Scheduled EDR Contact: 08/11/2008
Data Release Frequency: Varies

City of Los Angeles Landfills

Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/01/2008
Date Data Arrived at EDR: 03/20/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 25

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 03/12/2008
Next Scheduled EDR Contact: 06/09/2008
Data Release Frequency: Varies

Site Mitigation List

Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 02/14/2008
Date Data Arrived at EDR: 04/10/2008
Date Made Active in Reports: 05/06/2008
Number of Days to Update: 26

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 05/12/2008
Next Scheduled EDR Contact: 08/11/2008
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank

Underground storage tank sites located in El Segundo city.

Date of Government Version: 02/11/2008
Date Data Arrived at EDR: 02/21/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 22

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 05/12/2008
Next Scheduled EDR Contact: 08/11/2008
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank

Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 02/19/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Annually

City of Torrance Underground Storage Tank

Underground storage tank sites located in the city of Torrance.

Date of Government Version: 02/26/2008
Date Data Arrived at EDR: 02/27/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 16

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 05/12/2008
Next Scheduled EDR Contact: 08/11/2008
Data Release Frequency: Semi-Annually

MARIN COUNTY:

Underground Storage Tank Sites

Currently permitted USTs in Marin County.

Date of Government Version: 02/04/2008
Date Data Arrived at EDR: 02/21/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 22

Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 04/28/2008
Next Scheduled EDR Contact: 07/28/2008
Data Release Frequency: Semi-Annually

NAPA COUNTY:

Sites With Reported Contamination

A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 04/24/2008
Date Data Arrived at EDR: 04/25/2008
Date Made Active in Reports: 05/06/2008
Number of Days to Update: 11

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 04/07/2008
Next Scheduled EDR Contact: 06/23/2008
Data Release Frequency: Semi-Annually

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/07/2008
Next Scheduled EDR Contact: 06/23/2008
Data Release Frequency: Annually

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 03/03/2008
Date Data Arrived at EDR: 03/20/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 25

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 03/06/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 03/03/2008
Date Data Arrived at EDR: 03/25/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 20

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 03/06/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 03/03/2008
Date Data Arrived at EDR: 03/18/2008
Date Made Active in Reports: 04/09/2008
Number of Days to Update: 22

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 03/06/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 07/23/2007
Date Data Arrived at EDR: 07/23/2007
Date Made Active in Reports: 08/09/2007
Number of Days to Update: 17

Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 03/17/2008
Next Scheduled EDR Contact: 06/16/2008
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 08/06/2007
Date Data Arrived at EDR: 08/07/2007
Date Made Active in Reports: 09/26/2007
Number of Days to Update: 50

Source: Department of Public Health
Telephone: 951-358-5055
Last EDR Contact: 04/14/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: Quarterly

Underground Storage Tank Tank List

Underground storage tank sites located in Riverside county.

Date of Government Version: 08/06/2007
Date Data Arrived at EDR: 08/07/2007
Date Made Active in Reports: 09/24/2007
Number of Days to Update: 48

Source: Health Services Agency
Telephone: 951-358-5055
Last EDR Contact: 04/14/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Contaminated Sites

List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/11/2008
Date Data Arrived at EDR: 02/27/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 16

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 05/02/2008
Next Scheduled EDR Contact: 07/28/2008
Data Release Frequency: Quarterly

ML - Regulatory Compliance Master List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/11/2008
Date Data Arrived at EDR: 02/27/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 16

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 05/02/2008
Next Scheduled EDR Contact: 07/28/2008
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 03/18/2008
Date Data Arrived at EDR: 03/19/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 26

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 12/03/2007
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 05/16/2005
Date Data Arrived at EDR: 05/18/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 29

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 04/02/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 08/01/2007
Date Data Arrived at EDR: 02/05/2008
Date Made Active in Reports: 02/14/2008
Number of Days to Update: 9

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 02/19/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 11/28/2007
Date Data Arrived at EDR: 03/13/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 32

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 04/23/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Varies

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 03/03/2008
Date Data Arrived at EDR: 03/04/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: Quarterly

Underground Storage Tank Information

Underground storage tank sites located in San Francisco county.

Date of Government Version: 03/03/2008
Date Data Arrived at EDR: 03/04/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 10

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST

A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 02/01/2008
Date Data Arrived at EDR: 02/26/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 17

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 04/14/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: Semi-Annually

SAN MATEO COUNTY:

Business Inventory

List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 01/31/2008
Date Data Arrived at EDR: 02/01/2008
Date Made Active in Reports: 02/14/2008
Number of Days to Update: 13

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 04/07/2008
Next Scheduled EDR Contact: 07/07/2008
Data Release Frequency: Annually

Fuel Leak List

A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 04/10/2008
Date Data Arrived at EDR: 04/11/2008
Date Made Active in Reports: 05/06/2008
Number of Days to Update: 25

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 04/07/2008
Next Scheduled EDR Contact: 07/07/2008
Data Release Frequency: Semi-Annually

SANTA CLARA COUNTY:

HIST LUST - Fuel Leak Site Activity Report

A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/24/2008
Next Scheduled EDR Contact: 06/23/2008
Data Release Frequency: No Update Planned

LOP Listing

A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 04/28/2008
Date Data Arrived at EDR: 04/29/2008
Date Made Active in Reports: 05/06/2008
Number of Days to Update: 7

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 04/28/2008
Next Scheduled EDR Contact: 06/23/2008
Data Release Frequency: Varies

Hazardous Material Facilities

Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 03/04/2008
Date Data Arrived at EDR: 03/04/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 10

Source: City of San Jose Fire Department
Telephone: 408-277-4659
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: Annually

SOLANO COUNTY:

Leaking Underground Storage Tanks

A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 04/04/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/06/2008
Number of Days to Update: 14

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/24/2008
Next Scheduled EDR Contact: 06/23/2008
Data Release Frequency: Quarterly

Underground Storage Tanks

Underground storage tank sites located in Solano county.

Date of Government Version: 04/04/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/01/2008
Number of Days to Update: 9

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/24/2008
Next Scheduled EDR Contact: 06/23/2008
Data Release Frequency: Quarterly

SONOMA COUNTY:

Leaking Underground Storage Tank Sites

A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 01/22/2008
Date Data Arrived at EDR: 01/22/2008
Date Made Active in Reports: 02/14/2008
Number of Days to Update: 23

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 04/21/2008
Next Scheduled EDR Contact: 07/21/2008
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks

Underground storage tank sites located in Sutter county.

Date of Government Version: 05/04/2007
Date Data Arrived at EDR: 05/04/2007
Date Made Active in Reports: 05/24/2007
Number of Days to Update: 20

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 03/31/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks

The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 02/27/2008
Date Data Arrived at EDR: 03/25/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 20

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/12/2008
Next Scheduled EDR Contact: 06/09/2008
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites

Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 08/01/2007
Date Data Arrived at EDR: 08/29/2007
Date Made Active in Reports: 09/26/2007
Number of Days to Update: 28

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 02/19/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites

Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 02/27/2008
Date Data Arrived at EDR: 03/25/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 20

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/12/2008
Next Scheduled EDR Contact: 06/09/2008
Data Release Frequency: Quarterly

Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 03/26/2008
Date Data Arrived at EDR: 04/09/2008
Date Made Active in Reports: 05/01/2008
Number of Days to Update: 22

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/09/2008
Next Scheduled EDR Contact: 07/07/2008
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 01/29/2008
Date Data Arrived at EDR: 02/20/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 23

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 05/12/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: Annually

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 06/15/2007
Date Made Active in Reports: 08/20/2007
Number of Days to Update: 66

Source: Department of Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 03/14/2008
Next Scheduled EDR Contact: 06/09/2008
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 09/30/2007
Date Data Arrived at EDR: 12/04/2007
Date Made Active in Reports: 12/31/2007
Number of Days to Update: 27

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/03/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 02/15/2008
Date Data Arrived at EDR: 02/28/2008
Date Made Active in Reports: 04/09/2008
Number of Days to Update: 41

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 02/28/2008
Next Scheduled EDR Contact: 05/26/2008
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 12/21/2007
Date Made Active in Reports: 01/10/2008
Number of Days to Update: 20

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 03/10/2008
Next Scheduled EDR Contact: 06/09/2008
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 10/01/2007
Date Data Arrived at EDR: 11/09/2007
Date Made Active in Reports: 01/15/2008
Number of Days to Update: 67

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 03/17/2008
Next Scheduled EDR Contact: 06/16/2008
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 04/27/2007
Date Made Active in Reports: 06/08/2007
Number of Days to Update: 42

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 04/07/2008
Next Scheduled EDR Contact: 07/07/2008
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: PennWell Corporation
Telephone: (800) 823-6277
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)

Source: United States Geologic Survey

A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

ALTA VISTA
21215 220TH STREET WEST
LANCASTER, CA 93536

TARGET PROPERTY COORDINATES

Latitude (North):	34.79668 - 34˚ 47’ 48.0’’
Longitude (West):	118.51157 - 118˚ 30’ 41.7’’
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	361717.6
UTM Y (Meters):	3851340.2
Elevation:	2742 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	34118-G5 NEENACH SCHOOL, CA
Most Recent Revision:	1974
East Map:	34118-G4 FAIRMONT BUTTE, CA
Most Recent Revision:	1974

EDR’s GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

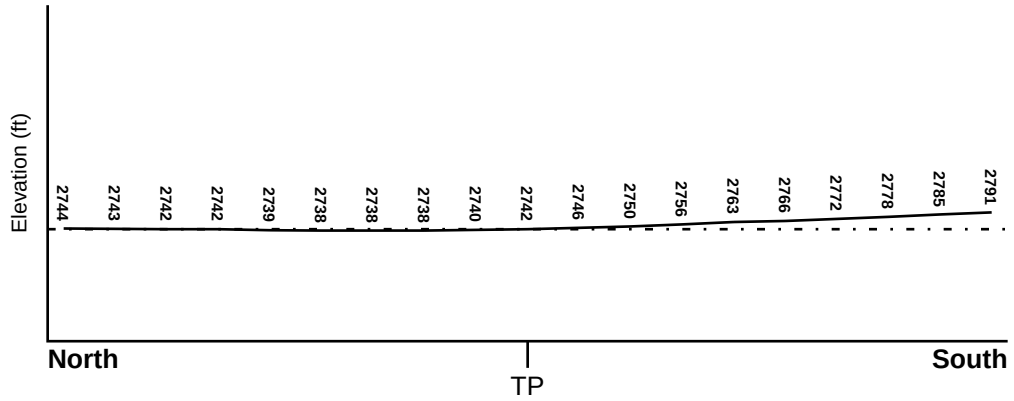
TOPOGRAPHIC INFORMATION

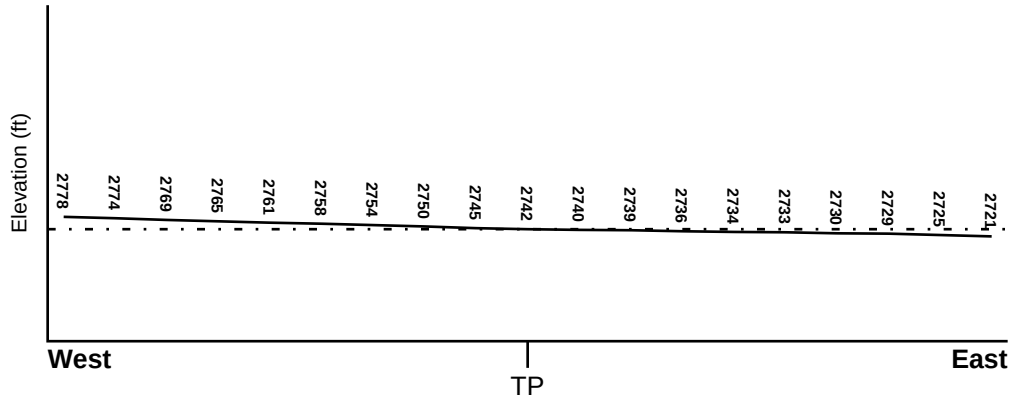
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General NE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 2742 ft.

0 1/2 1 Miles

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
LOS ANGELES, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 0650430075B

Additional Panels in search area: 0650430050B

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
NEENACH SCHOOL	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius: 1.25 miles
Status: Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

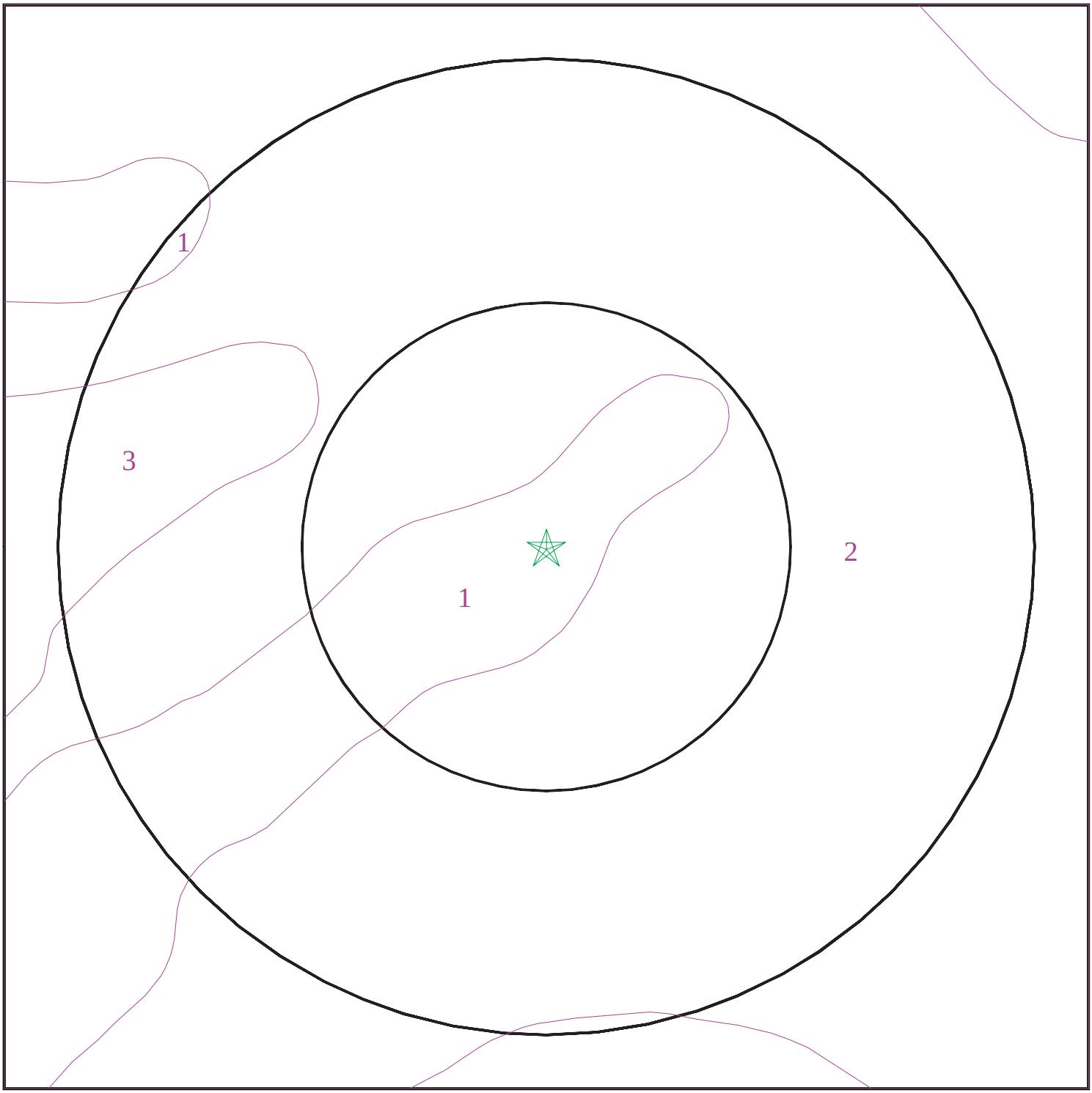
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 2221972.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Alta Vista	CLIENT:	Avalon Env. Consultants
ADDRESS:	21215 220th Street West Lancaster CA 93536	CONTACT:	Moe Navid
		INQUIRY #:	2221972.2s
LAT/LONG:	34.7967 / 118.5116	DATE:	May 16, 2008 7:23 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Vernalis

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 7.4
2	9 inches	35 inches	loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 7.4
3	35 inches	59 inches	stratified sandy loam to silty clay loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 7.4

Soil Map ID: 2

Soil Component Name: Vernalis

Soil Surface Texture: loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 6.6
2	14 inches	35 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 6.6
3	35 inches	59 inches	stratified sandy loam to silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 6.6

Soil Map ID: 3

Soil Component Name: Greenfield

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
2	20 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
3	59 inches	79 inches	stratified loamy sand to coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6

Soil Map ID: 4

Soil Component Name: Hanford

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.6
2	7 inches	38 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.6
3	38 inches	70 inches	gravelly loamy coarse sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.6

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	USGS3158055	1/2 - 1 Mile South
B3	USGS3158056	1/2 - 1 Mile SSW

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
C5	USGS3158058	1/2 - 1 Mile SW

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

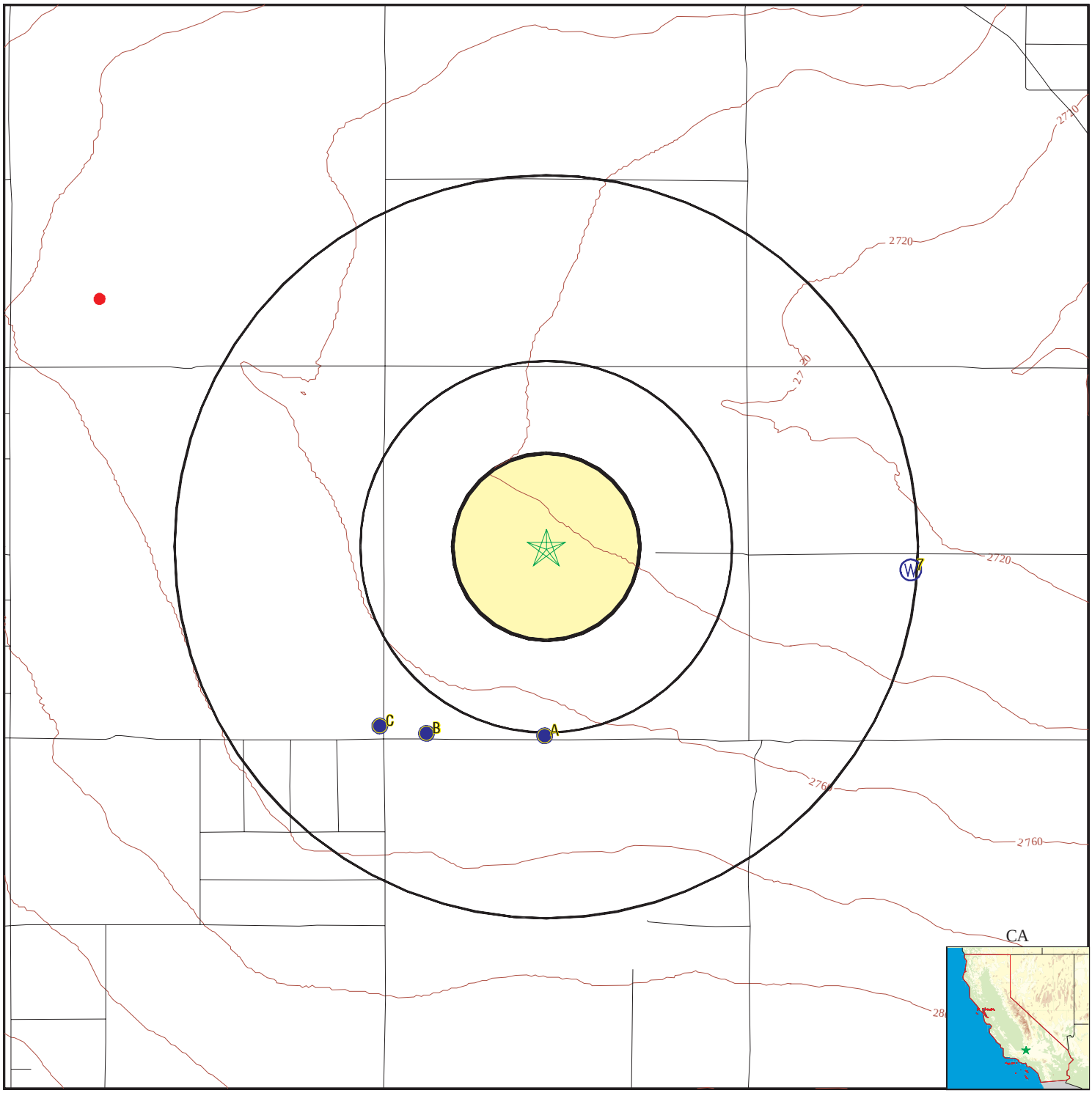
MAP ID	WELL ID	LOCATION FROM TP
A2	CADW20000015583	1/2 - 1 Mile South
B4	CADW20000015584	1/2 - 1 Mile SW
C6	CADW20000015587	1/2 - 1 Mile SW
7	CADW20000015671	1/2 - 1 Mile East

OTHER STATE DATABASE INFORMATION

STATE OIL/GAS WELL INFORMATION

DISTANCE FROM TP (Miles)	DISTANCE FROM TP (Miles)
1 - 2 Miles WNW	

PHYSICAL SETTING SOURCE MAP - 2221972.2s



County Boundary
Major Roads
Contour Lines
Earthquake Fault Lines
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

0 1/4 1/2 1 Miles

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location
HD Closest Hydrogeological Data
Oil, gas or related wells

N

SITE NAME: Alta Vista ADDRESS: 21215 220th Street West Lancaster CA 93536 LAT/LONG: 34.7967 / 118.5116	CLIENT: Avalon Env. Consultants CONTACT: Moe Navid INQUIRY #: 2221972.2s DATE: May 16, 2008 7:23 pm

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Map ID Direction Distance Elevation	Database	EDR ID Number
A1 **South** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS3158055**

Agency cd:	USGS	Site no:	344722118303601
Site name:	008N015W07P001S		
Latitude:	344721.6		
Longitude:	1183040.2	Dec lat:	34.78933333
Dec lon:	-118.51116667	Coor meth:	G
Coor accr:	5	Latlong datum:	NAD83
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Neenach School	Map scale:	24000
Altitude:	2759		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	2.5		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19551001
Date inventoried:	19620411	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	750	Hole depth:	Not Reported
Source of depth data:	other reported		
Project number:	479281160		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1955-10-01	Ground water data end date:	2004-03-30
Ground water data count:	9		

Ground-water levels, Number of Measurements: 9

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2004-03-30	165.68		2003-03-25	162.14	
2002-03-28	155.97		2001-05-08	152.21	
1962-04-11	175.10		1960-11-28	160.3	
1957-03-06	177.0		1956-11-20	160.1	
1955-10-01	191.70				

A2 **South** **1/2 - 1 Mile** **Higher**	**CA WELLS**	**CADW20000015583**

Longitude:	118.5112
Latitude:	34.7893
Stwellno:	08N15W07P001S
Districtco:	3
Welluseco:	Z
Countycode:	19
Gwcode:	604400
Site id:	CADW20000015583

B3
SSW **FED USGS** **USGS3158056**
1/2 - 1 Mile
Higher

Agency cd:	USGS	Site no:	344722118305701
Site name:	008N015W07N002S		
Latitude:	344722		
Longitude:	1183057	Dec lat:	34.78942435
Dec lon:	-118.51675111	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	SESWSWS07T08NR15WS
Location map:	NEENACH SCHOOL	Map scale:	24000
Altitude:	2762.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	3		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	7479381100		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1978-03-28	Ground water data end date:	1984-03-05
Ground water data count:	7		

Ground-water levels, Number of Measurements: 7

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1984-03-05					
Note: The measurement was discontinued.					
1983-04-13					
Note: An obstruction was encountered in the well above the water surface (no water level recorded).					
1982-02-09					
Note: An obstruction was encountered in the well above the water surface (no water level recorded).					
1981-04-15	183.54		1980-03-11	182.35	

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1979-02-16	184.90		1978-03-28	184.75	

B4
SW
1/2 - 1 Mile
Higher

CA WELLS **CADW20000015584**

Longitude:	118.5168
Latitude:	34.7894
Stwellno:	08N15W07N002S
Districtco:	3
Welluseco:	Z
Countycode:	19
Gwcode:	604400
Site id:	CADW20000015584

C5
SW
1/2 - 1 Mile
Higher

FED USGS **USGS3158058**

Agency cd:	USGS	Site no:	344723118310501
Site name:	008N015W07N001S		
Latitude:	344723		
Longitude:	1183105	Dec lat:	34.78970211
Dec lon:	-118.5189734	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	NEENACH SCHOOL	Map scale:	24000
Altitude:	2763.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19550101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	589	Hole depth:	653
Source of depth data:	Not Reported		
Project number:	479281160		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1955-03-25	Ground water data end date:	1977-03-11
Ground water data count:	18		

Ground-water levels, Number of Measurements: 18

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1977-03-11	0.00				
1976-02-11					
Note: An obstruction was encountered in the well above the water surface (no water level recorded).					
1975-02-15					
Note: An obstruction was encountered in the well above the water surface (no water level recorded).					
1963-04-02	201.00		1962-11-08	176.50	
1962-04-05	153.30		1961-10-17	154.20	
1961-04-05	151.50		1960-10-26	156.60	
1960-03-08	156.30		1959-11-13	156.60	
1959-03-17	153.30		1958-11-26	157.70	
1958-03-11	151.90		1957-11-14	153.80	
1956-07-19	206.40		1956-06-22	120.50	
1955-03-25	145.00				

C6
SW **CA WELLS** **CADW20000015587**
1/2 - 1 Mile
Higher

Longitude:	118.519
Latitude:	34.7897
Stwellno:	08N15W07N001S
Districtco:	3
Welluseco:	Z
Countycode:	19
Gwcode:	604400
Site id:	CADW20000015587

7
East **CA WELLS** **CADW20000015671**
1/2 - 1 Mile
Lower

Longitude:	118.4934
Latitude:	34.7958
Stwellno:	08N15W08L001S
Districtco:	3
Welluseco:	Z
Countycode:	19
Gwcode:	604400
Site id:	CADW20000015671

Direction Distance	Database	EDR ID Number
WNW 1 - 2 Miles	**OIL_GAS**	**CAOG40000052693**

Apinumber:	03706010	Operator:	Wm. J. Stava
Lease:	Gorrindo	Well no:	1
Field:	Any Field	Cagasoil m2 area:	Any Area
Map:	W1-1	Status cod:	006
Source:	hud		
Latitude:	34.806382		
Longitude:	-118.53179		
Td:	0		
Sec:	1		
Twn:	08N	Rge:	16W
Bm:	SB		
X coord:	0		
Y coord:	0		
Zone:	Not Reported	Spuddate:	09/18/1954 00:00:00
Abanddate:	12/06/1963 00:00:00	Comments:	Not Reported
District:	2	Site id:	CAOG40000052693

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zip	Total Sites	> 4 Pci/L	Pct. > 4 Pci/L
93536	11	1	9.09

Federal EPA Radon Zone for LOS ANGELES County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93536

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.600 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW[R] Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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APPENDIX V

AERIAL PHOTOGRAPHS AND HISTORICAL TOPOGRAPHIC MAPS

Alta Vista
21215 220th Street West
Lancaster, CA 93536

Inquiry Number: 2230727.1
May 29, 2008

The EDR Aerial Photo Decade Package

EDR® Environmental Data Resources Inc

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EDR Aerial Photo Decade Package

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Date EDR Searched Historical Sources:

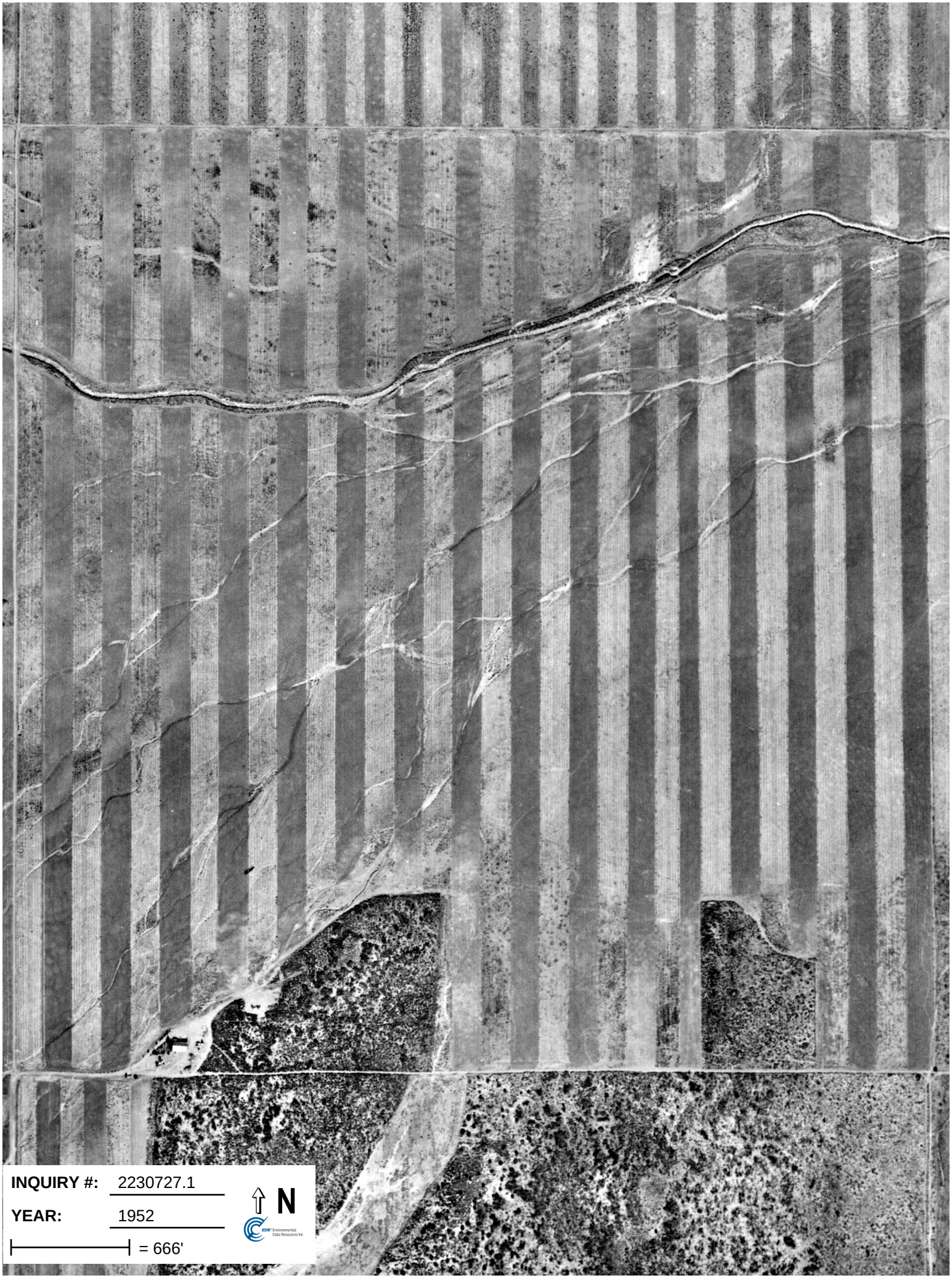
Aerial Photography May 29, 2008

Target Property:

21215 220th Street West

Lancaster, CA 93536

Year	***Scale***	***Details***	***Source***
1952	Aerial Photograph. Scale: 1"=666'	Flight Year: 1952	Pacific Air
1968	Aerial Photograph. Scale: 1"=666'	Flight Year: 1968	Teledyne
1989	Aerial Photograph. Scale: 1"=666'	Flight Year: 1989	USGS
1994	Aerial Photograph. Scale: 1"=666'	Flight Year: 1994	USGS
2002	Aerial Photograph. Scale: 1"=666'	Flight Year: 2002	USGS
2005	Aerial Photograph. Scale: 1"=484'	Flight Year: 2005	EDR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YEAR: 1952
= 666'
N

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YEAR: 1968
= 666'
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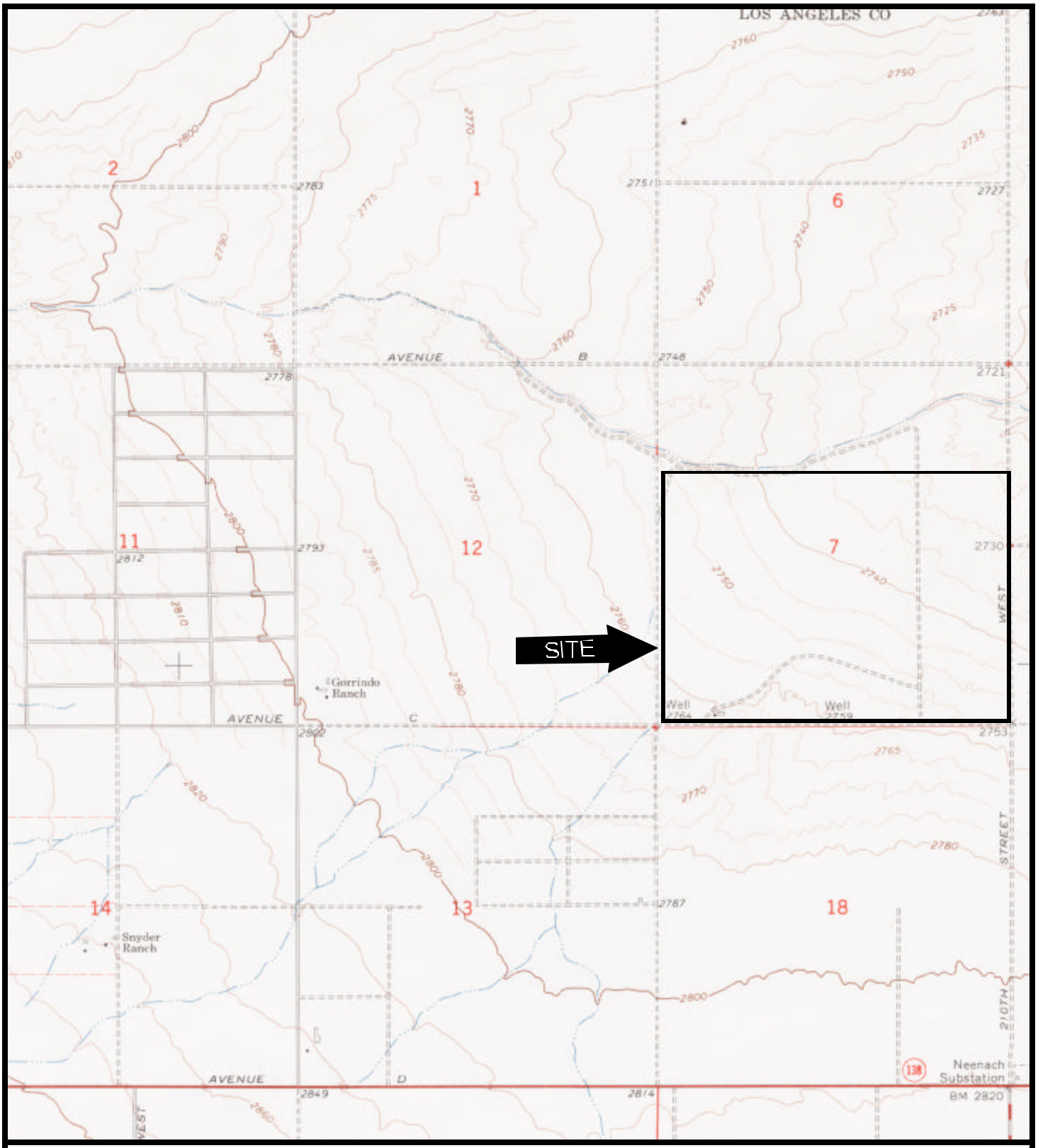
INQUIRY #: 2230727.1
YEAR: 1989
= 666'
N

INQUIRY #: 2230727.1
YEAR: 1994
= 666'
N

INQUIRY #: 2230727.1
YEAR: 2002
= 666'
N

INQUIRY #: 2230727.1
YEAR: 2005
= 484'
N

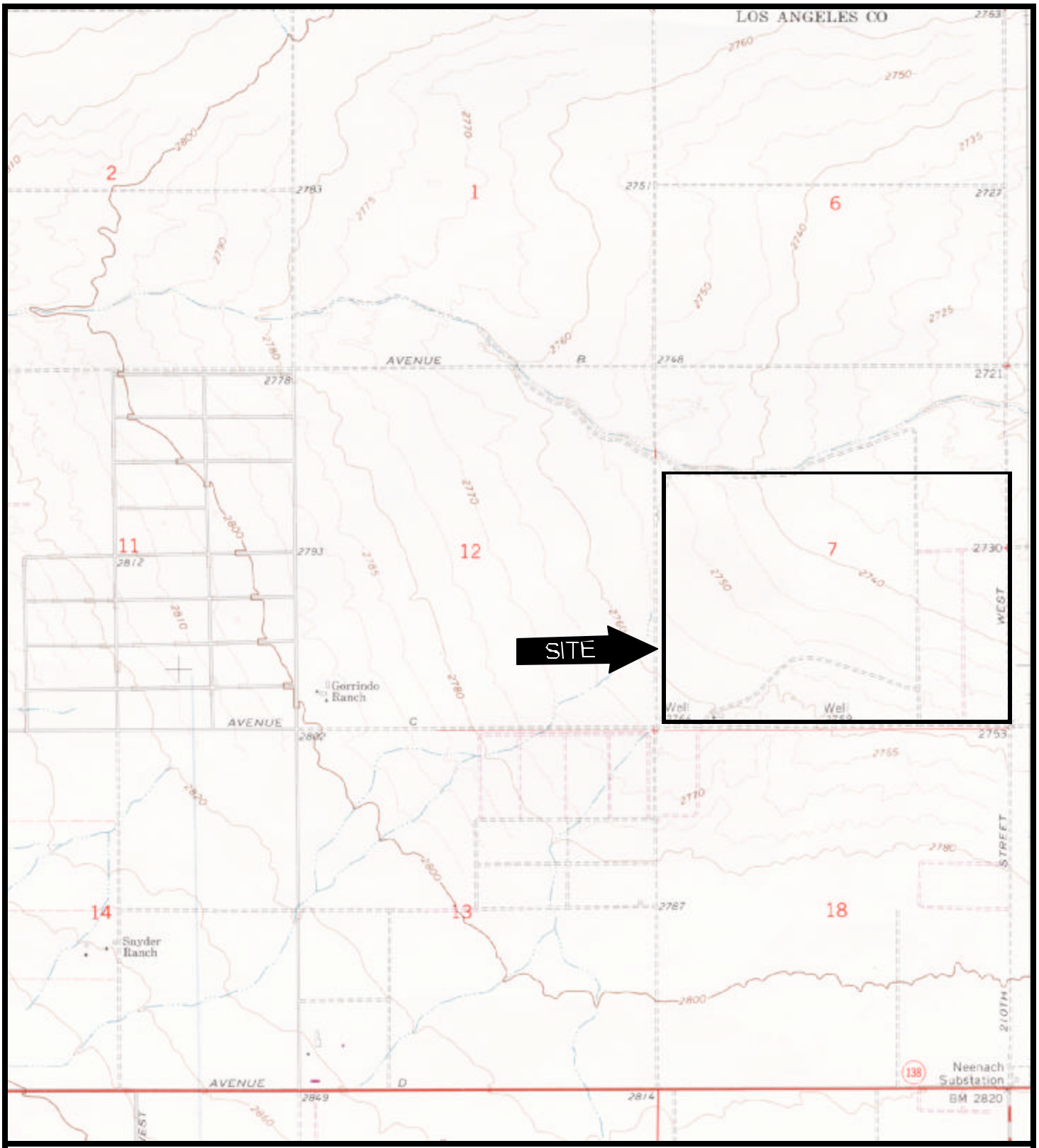


1965 USGS TOPOGRAPHY MAP

AVALON ENVIRONMENTAL CONSULTANTS
TUSTIN, CALIFORNIA

Source:
U.S.G.S., 7.5 Minute Series Topographic Maps: Neenach School Quad, California, 1965

N

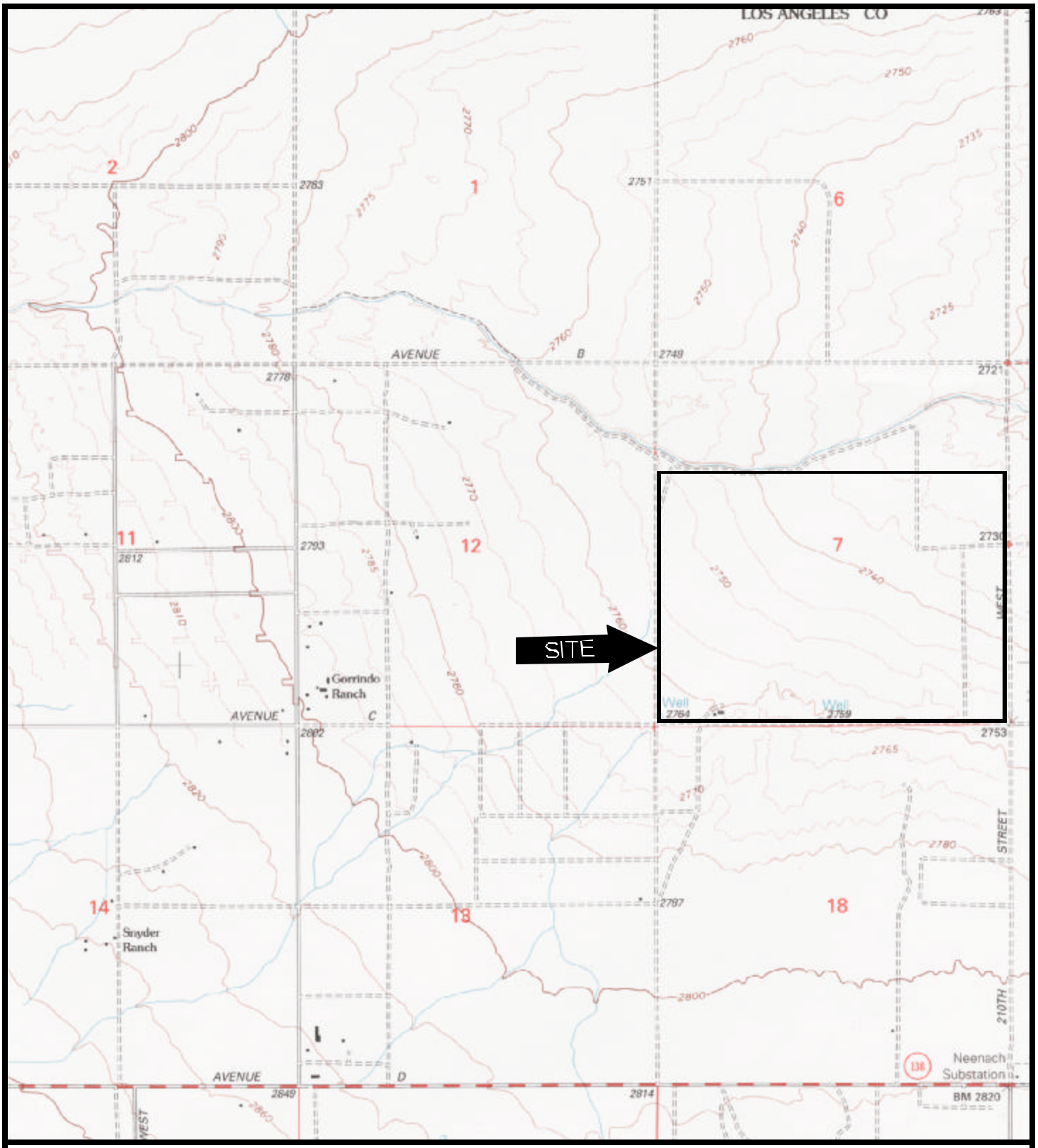


1974 USGS TOPOGRAPHY MAP

AVALON ENVIRONMENTAL CONSULTANTS
TUSTIN, CALIFORNIA

Source:
U.S.G.S., 7.5 Minute Series Topographic Maps: Neenach School Quad, California, 1974

N



1995 USGS TOPOGRAPHY MAP

AVALON ENVIRONMENTAL CONSULTANTS
TUSTIN, CALIFORNIA

Source:
U.S.G.S., 7.5 Minute Series Topographic Maps: Neenach School Quad, California, 1995

N

APPENDIX VI

PHOTOGRAPHS

THE SUBJECT PROPERTY LOOKING SOUTHEAST FROM WEST AVE. B AND WEST 220TH ST.

THE SUBJECT PROPERTY LOOKING SOUTHWEST FROM WEST AVENUE B

WELL ALONG WEST AVENUE C

FARMSTEAD ALONG WEST AVENUE C

ADJACENT PROPERTY LOCATED TO THE NORTH

ADJACENT PROPERTY LOCATED TO THE SOUTH

ADJACENT PROPERTY LOCATED TO THE EAST

ADJACENT PROPERTY LOCATED TO THE WEST

AVALON ENVIRONMENTAL CONSULTANTS

PHASE I ENVIRONMENTAL SITE ASSESSMENT
PERFORMED AT
LOS ANGELES COUNTY TAX ASSESSOR'S
APNS 3256-006-012, AND 013
LOS ANGELES COUNTY, CALIFORNIA 93536
PROJECT NUMBER: 0920-233-1

PREPARED FOR
NRG SOLAR
CARLSBAD, CALIFORNIA
JULY 19, 2010

AVALON ENVIRONMENTAL CONSULTANTS
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PHASE I ENVIRONMENTAL SITE ASSESSMENT,
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PREPARED FOR
NRG SOLAR
CARLSBAD, CALIFORNIA
JULY 19, 2010

PREPARED BY: _____

Mohammad Navid, REA
Project Manager

REVIEWED BY: _____

Trevor D. Santochi PG, CEG
Principal

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY 1

2.0 GENERAL SITE INFORMATION 2
- 2.1 Physical Building/Real Property Description 2
- 2.2 Geology/Hydrology 2
- 2.3 Land Usage in the Property Vicinity 3

3.0 HISTORICAL SITE INFORMATION 3
- 3.1 Sanborn Fire Insurance Maps 3
- 3.2 Topographic Maps 4
- 3.3 Aerial Photographs 4
- 3.4 Building Permit Records 5

4.0 ENVIRONMENTAL RECORD RESEARCH 5
- 4.1 Information Sources 5
- 4.2 Site Records 6
- 4.3 Federal/State - Listed Properties 6
  - 4.3.1 NPL Sites 6
  - 4.3.2 CERCLIS/NFRAP Sites 6
  - 4.3.3 State and Tribal Solid Waste Landfill Sites 6
  - 4.3.4 State and Tribal LUST Sites 6
  - 4.3.5 State and Tribal Sites 6
  - 4.3.6 RCRA Sites 6
  - 4.3.7 State and Tribal UST/AST Sites 7
  - 4.3.8 ERNS Sites 7

5.0 VISUAL SITE ASSESSMENT 7
- 5.1 Storage Tanks 7
- 5.2 Polychlorinated Biphenyls ("PCBs") 7
- 5.3 Storage of Chemicals and Hazardous Materials 8
- 5.4 Evidence of Environmental Contamination 8
- 5.5 Solid Waste 8
- 5.6 Potentially Restrictive Property Features/Uses 8
- 5.7 Pits, Ponds or Lagoons 9
- 5.8 Visual Observations of Adjacent Properties 9
- 5.9 Drains, Sumps or Waste Water 9
- 5.10 Wells 9
- 5.11 Mechanical Equipment 9

6.0 USER PROVIDED INFORMATION 9

7.0 ADDITIONAL ANALYSIS 10
7.1 Lead in Drinking Water 10
7.2 Radon 11
7.3 Asbestos Observations 11

8.0 FINDINGS, CONCLUSIONS AND RECOMMENDATIONS 12
8.1 Findings 12
8.2 Conclusions 13
8.3 Recommendations 13

9.0 LIMITATIONS TO THE REPORT 13
9.1 General Limitations to the Report 13
9.2 Limitations of Asbestos Observations 14
9.3 Conflict Certification 14
9.4 Declarations 15

APPENDICES 16

1.0 EXECUTIVE SUMMARY

Avalon Environmental Consultants, Inc. (Avalon), conducted a Phase I Environmental Site Assessment (ESA) at the request of NRG Solar. The assessment was performed by Mohammad Navid, Project Manager with Avalon. The assessment was performed at Los Angeles County Tax Assessor's APNs 3256-006-016 and 013, northwest of Lancaster, in the County of Los Angeles, California, on June 10, 2010. According to NRG Solar, the subject property is to be developed with a solar power plant. This Phase I ESA was performed using ASTM Standard Practice E1527-05 as guidance.

Based upon the information reviewed during this site assessment, Avalon identified the following findings:

- The subject property consists of approximately 200 acres of vacant farmland with a farmstead at the intersection of West Avenue B-8 and 200th Street West. The farmstead structures were constructed in 2002. The subject property has consisted of vacant farmland dating back to at least 1952.

- Stained soil and a stained 10 foot by 18 foot concrete pad, with a petroleum odor, was noted in the northwestern area of the subject property, approximately 100 feet south of West Avenue B-8 and approximately 100 feet east of the western subject property boundary. In addition, a larger concrete pad is located approximately 150 feet south of the above described area. An unidentifiable pipe is protruding from the slab, which may indicate the presence of an Underground Storage Tank. The use of this pad could not be determined.

Based on the above findings, Avalon concludes the following:

- The subject property appears to have a Recognized Environmental Condition (REC) as defined by ASTM Standard E1527-05 due to the presence of stained soil and a stained concrete pad, with a petroleum odor.

  The term *recognized environmental conditions*, as defined by ASTM Standard Practice E1527-05, is the presence or likely presence of any hazardous substance or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release into structures on the property or into terminus ground, groundwater, or surface water of the property.

- Avalon was unable to inspect the interiors of the structures on the subject property, however, based on the date of construction, 2002, it is unlikely that friable ACMs exist in the subject property buildings.

Based on the above conclusions, Avalon recommends the following:

- Prior to any renovation or demolition activities, a Comprehensive Asbestos Survey should be conducted by a Certified Asbestos Consultant to identify possible ACMs present in the subject property buildings.

- Subsurface soil sampling should be conducted in the area of the stained soil and concrete pad and in the area of the unidentifiable pipe to determine if the subsurface of the subject property has been adversely impacted.

- The septic tank system on the subject property should be emptied prior to purchase.

2.0 GENERAL SITE INFORMATION

2.1 Physical Building/Real Property Description

The subject property consists of a two parcels with a total area of approximately 200 acres. The subject property is located on the west side of 200th Street West and on the north and south sides of West Avenue B-8, in an undeveloped area of the County of Los Angeles. Most of the subject property consist of former farmland interspersed with natural vegetation. A portion of the subject property on the western portion of the subject property, north of Avenue B-8 has been developed with a farmstead consisting of a pre-manufactured single-family residence and a stable. Avalon was unable to inspect inside the subject property structure, however, a visual reconnaissance did not reveal any obvious environmental concerns. Water to the subject property appears to be from an onsite well and sewage appears to be disposed of into an onsite septic tank.

Site History Summary

The subject property has consisted of vacant farmland dating back to at least 1952. A structure was constructed on the northwestern portion of parcel 3256-006-013 between 1975 and 1989. The use of this structure could not be determined, however, the concrete foundation still remains along with an attached electrical conduit and an unidentifiable pipe protruding from slab. In 2002, a pre-manufactured home and a barn were constructed on the southeastern portion of parcel 3256-006-012.

2.2 Geology/Hydrology

Geology - The subject property lies within in the Western Mojave Desert region which covers parts of Kern, Los Angeles and San Bernardino Counties. The region is bounded by large mountain ranges including the San Bernardino Mountains to the south, and the Tehachapi ranges to the northwest. The surface of the Western Mojave Desert region is largely covered by non marine sand, gravel and silt and is made up by a series of playas. The basement rocks consist

of (a) old crystalline basement rocks (igneous plutonic and metamorphic rocks), (b) sedimentary rocks (Tertiary), and recent to late recent quaternary basalt flows. The elevations of the Western Mojave Desert region range from 4,000 feet in the foothills to 2,000 feet in the dry lakes and playas.

Hydrology - Based on data from the onsite groundwater wells, groundwater is approximately 140 to 165 feet below ground surface (bgs). Based on the topography of the this area, groundwater is anticipated to flow toward the south.

A topography and site location map is provided in Appendix I.

2.3 Land Usage in the Property Vicinity

The subject property is located in a mostly undeveloped area in the County of Los Angeles. Adjacent properties are as follows:

North: Vacant land.
South: West Avenue C with vacant land beyond.
East: 200th Street West with vacant land beyond.
West: Vacant land beyond.

3.0 HISTORICAL SITE INFORMATION

The site history of the subject property was reviewed through Sanborn Fire Insurance Maps, topographic maps, aerial photographs, and building permit records.

3.1 Sanborn Fire Insurance Maps

Founded in 1867 by D. A. Sanborn, the Sanborn Map Company was the primary American publisher of fire insurance maps for nearly 100 years. Sanborn fire insurance maps are large-scale plans containing data that can be used to estimate the potential risk for urban structures. This includes information such as the outline of each building, the size, shape and construction materials, heights, and function of structures, location of windows and doors. The maps also give street names, street and sidewalk widths, property boundaries, building use, and house and block numbers. Seven or eight different editions represent some areas.

Extensive information on building use is given, ranging from symbols for generic terms such as stable, garage, and warehouse to names of owners of factories and details on what was manufactured in them. In the case of large factories or commercial buildings, even individual rooms and the uses to which they were put are recorded on the maps. Other features shown include pipelines, railroads, wells, dumps, and heavy machinery.

Sanborn Fire Insurance Maps were not available for the subject property area.

3.2 Topographic Maps

Historical topographic maps issued by the U.S.G.S. were reviewed for the subject property and the adjacent properties. The review of the maps revealed the following information:

1965- The subject property is depicted as vacant land on the northwest corner of West Avenue C and 200th Street West and is bisected by West Avenue B-8. The surrounding properties are depicted as vacant undeveloped land.

1974- The subject property and the surrounding properties are unchanged from the previous map.

1992- The subject property and the surrounding properties are unchanged from the previous map.

No areas of environmental concern were noted in any of the maps.

3.3 Aerial Photographs

Aerial photographs were reviewed for the subject property and the adjacent properties. The review of the photographs revealed the following information:

1952- The subject property appears to be vacant farmland on parcel 3256-006-013 and vacant undeveloped land on parcel 3256-006-012. The surrounding properties appear to be vacant undeveloped land.

1968- The subject property and the surrounding properties appear unchanged from the previous photograph.

1974- The subject property and the surrounding properties appear unchanged from the previous photograph.

1989- The subject property appears unchanged from the previous photograph with the exception of a structure which has been constructed in the northwestern portion of parcel 3256-006-013. The surrounding properties appear unchanged from the previous photograph.

1994- The subject property and the surrounding properties are unchanged from the previous photograph.

2002- The subject property appears unchanged from the previous photograph with the exception of a farmstead which has been constructed in the southeastern portion of parcel 3256-006-012. The surrounding properties appear unchanged from the previous photograph.

2005- The subject property and the surrounding properties are unchanged from the previous photograph.

2006- In an oblique aerial photograph from Bing Maps, the subject property appears unchanged from the previous photograph with the exception that a tanker trailer is parked in the northwestern portion of parcel 3256-006-013 (in the area of the soil staining observed during the site visit.) A copy of this photograph is not available to include in the report.

Based on the aerial photograph from 2006, it appears that a tanker trailer was parked on the area where soil staining was observed during the site visit. It is important to note that the contents of the tanker trailer is not known.

3.4 Building Permit Records

Building permit records were reviewed through the County of Los Angeles Tax Assessor's Office and at the County of Los Angeles, Department of Building and Safety. The review of the records revealed the following information:

2002- A building permit was issued on June 13, 2002, for the construction of a 2,356 square-foot, manufactured home. The owner is listed as Scott Casper.

2002- According to the County of Los Angeles Tax Assessor's records, the subject property at parcel 3256-006-12 was improved with a manufactured home in 2002.

According to the County of Los Angeles Tax Assessor's records, the subject property at parcel 3256-006-13 has always been vacant land.

No areas of concern were noted during the building permit records review.

4.0 ENVIRONMENTAL RECORD RESEARCH

4.1 Information Sources

During the course of the environmental records research, Avalon used Environmental Data Resources Radius Map™ Report No. 2783581.2s. The list of records reviewed included NPL,

CERCLIS, SWLF, LUST, State Sites, RCRA, UST, AST, and ERNS (See Appendix IV, EDR Radius Map Report for a comprehensive description of each list).

4.2 Site Records

During the course of the assessment, Avalon did not encounter on-site records pertaining to potential contamination of the subject property caused by on-site operations or activities.

4.3 Federal/State - Listed Properties

4.3.1 NPL Sites

No sites are listed on the Environmental Protection Agency's (EPA) National Priority List (NPL) within a one mile radius of the subject property.

4.3.2 CERCLIS/NFRAP Sites

No sites are listed on the EPA Comprehensive Environmental Response Compensation and Liability Act List (CERCLIS) and No Further Remedial Action Planned (NFRAP) list within a one-half mile radius of the subject property.

4.3.3 State and Tribal Solid Waste Landfill Sites

No sites are listed on the California Integrated Waste Management Board for active or inactive landfills (SWL) within a one-half mile radius of the subject property.

4.3.4 State and Tribal LUST Sites

No sites are listed on the California EPA's Leaking Underground Storage Tank List (LUST) within a one-half mile radius of the subject property.

4.3.5 State and Tribal Sites

No sites are listed on the California Department of Toxic Substances Control's list of historical Cal-Sites or on the ENVIROSTOR database within a one mile radius of the subject property.

4.3.6 RCRA Sites

No sites are listed on the EPA's Resource Conservation and Recovery (RCRA) Program of Treatment, Storage, or Disposal (TSD) facilities or the RCRA Corrective Actions and associated TSDs (CORRACTS) within a one-mile radius of the subject property.

No sites are listed on the EPA's RCRA Program of Large and Small Quantity Generators within a one-quarter mile radius of the subject property.

4.3.7 State and Tribal UST/AST Sites

No sites are listed on the California State Water Resource Control Board's (CSWRCB) inventory of registered Underground Storage Tanks (USTs) located within a one-quarter mile radius of the subject property.

No sites are listed on the CSWRCB's inventory of registered Aboveground Storage Tanks (ASTs) located within a one-quarter mile radius of the subject property.

4.3.8 ERNS Sites

The subject property is not listed on the Emergency Response Notification System (ERNS) List.

5.0 VISUAL SITE ASSESSMENT

Avalon conducted a visual site assessment to identify recognizable areas of potential environmental contamination which could impact the air, soil, surface water or groundwater. These areas include the presence of Aboveground or Underground Storage Tanks (ASTs or USTs), potential Polychlorinated Biphenyl (PCB) containing electrical equipment, improper storage and handling of hazardous materials and observations for off-site as well as on-site contamination sources.

5.1 Storage Tanks

Avalon did not observe any evidence of USTs or ASTs on the subject property. An unidentified pipe is located at the southern end of a concrete pad on parcel 3256-006-013 which may be a vent pipe for a UST.

5.2 Polychlorinated Biphenyls ("PCBs")

The EPA banned the manufacture and sale of Polychlorinated Biphenyls (PCBs) containing transformers in 1978. Prior to 1978, transformers were frequently filled with dielectric fluid containing PCB-laden oil. By 1985, the EPA required that commercial property owners with transformers containing more than 500 parts per million(ppm) PCBs must register the transformer with the local fire department, provide exterior labeling, and remove combustible materials within five meters of the transformer (40 Code of Federal Regulation, sec. 761.30, “Fire Rule”).

The EPA has the following categories for PCB-containing transformers:

- if less than 50 ppm PCB, then the transformer is a non-PCB containing transformer.
- if between 50 and 499 ppm PCB, then the transformer is considered to be a PCB contaminated transformer and must conform to the EPA Fire Rule for disposal; and
- if greater than 500 ppm PCB, then the transformer is a PCB-transformer.

PCBs may also be found in capacitors and fluorescent lighting unit ballasts. The EPA banned the manufacture of PCBs in 1978, and all light ballasts manufactured thereafter should be labeled by the manufacturer as "No PCBs".

Avalon did not observe any transformers located on the subject property.

5.3 Storage of Chemicals and Hazardous Materials

Avalon did not observe the storage of any chemicals or hazardous materials on the subject property.

5.4 Evidence of Environmental Contamination

Avalon did not observe evidence of environmental contamination on the subject property, however, Avalon did observe stained soil and a stained 10 foot by 18 foot concrete pad, with a petroleum odor, in the northwestern area of parcel 3256-006-013, approximately 100 feet south of West Avenue B-8 and approximately 100 feet east of the western subject property boundary.

5.5 Solid Waste

Solid wastes are not currently being produced at the subject property.

5.6 Potentially Restrictive Property Features/Uses

Avalon did not observe any potentially restrictive property features or uses. This observation is limited to those property features causing a significant environmental effect that could be readily identified through visual observations.

5.7 Pits, Ponds or Lagoons

Avalon did not observe any pits, ponds or lagoons on the subject property.

5.8 Visual Observations of Adjacent Properties

A visual reconnaissance of the subject property shows the adjacent properties to be vacant undeveloped land and farmland with no apparent cause for environmental concern.

5.9 Drains, Sumps or Waste Water

Avalon did not observe any evidence of drains, sumps or waste water on the subject property.

5.10 Wells

Avalon observed two groundwater wells on the subject property used for irrigating the onsite farms. No environmental concerns were noted.

5.11 Mechanical Equipment

Avalon did not observe any permanent mechanical equipment on the subject property.

6.0 USER PROVIDED INFORMATION

User Provided Information includes Title Records, Specialized Knowledge, Valuation Reduction for Environmental Issues, Owner, Property Manager, and Occupant Information.

A User Questionnaire was completed by Mr. Michael Bass of e-Solar.

		Yes	No
(1.)	**Environmental cleanup liens that are filed or recorded against the site (40 CFR 312.25)**		√
(2.)	**Activity and land use limitations that are in place on the site or that have been filed or recorded in a registry (40 CFR 312.26)**		√
(3.)	**Specialized knowledge or experience of the person seeking to qualify for the Landowner Liability Protection (LLP) (40 CFR 312.28)**		√
(4.)	**Relationship of the purchase price of the fair market value of the property if it were not contaminated (40 CFR 312.29)**	√	

		Yes	No
(5.)	**Commonly known or reasonably ascertainable information about the property (40 CFR 312.30)**		
A.	**Do you know the past uses of the property?**		√
B.	**Do you know of specific chemicals that are present or once were present at the property?**		√
C.	**Do you know of spills or other chemical releases that have taken place at the property?**		√
D.	**Do you know of any environmental cleanups that have taken place at the property?**		√
(6.)	**The degree of obviousness of the presence or likely presence of contamination at the property, and the ability to detect the contamination by appropriate investigation (40 CFR 312.31)**		√

Key Site Manger- Avalon interviewed Al Gels of Gels & Company. According to Mr. Gels, the subject property consists of vacant land and farmland with a farmstead. Mr. Gels is unaware of any environmental concerns associated with the subject property.

Local Agencies- Avalon contacted the Los Angeles County Department of Public Works, Environmental Programs to inquire about any files for the subject property area. No files involving hazardous materials were found at the agency.

7.0 ADDITIONAL ANALYSIS

In addition to the site assessment, Avalon also reviewed radon testing data from the California Department of Health Services and contacted local agencies regarding lead content in drinking water.

7.1 Lead in Drinking Water

Sampling for lead in drinking water was not conducted per the Scope of Work for this Phase I Environmental Assessment. Drinking water is not currently provided to the subject property.

7.2 Radon

Avalon reviewed the *California State Radon Survey* which was conducted by the Department of Health Services (DHS) in conjunction with the United States Environmental Protection Agency (U.S. EPA). The California survey is a part of an ongoing program by the U.S. EPA to measure levels of radon in all states in the country. In this report, California was organized into nine sampling regions using general geology, climate and existing radon distribution knowledge. The geographically distributed results were later weighted for population distribution by the U.S. EPA. The subject property is located in Region 9 which includes Los Angeles, San Bernardino, Orange, Riverside, San Diego and Imperial Counties. The results of the survey indicate that over 95 percent of all homes in this region have radon concentrations below 4.0 picoCuries per liter of air (pCi/l). The average radon concentration for Region 9 is 0.6 pCi/l, well below the U.S. EPA action limit of 4.0 pCi/l.

The only definitive way to verify the presence of radon is to test the property for radon; however, due to the reported low concentrations of radon in the subject property region, it is unlikely the subject property will be impacted by the presence of radon.

7.3 Asbestos Observations

Friable ACM is defined as crushable to a powder with finger pressure. The Environmental Protection Agency (EPA) states that any friable material containing greater than 1% asbestos is considered a hazardous material. Friable asbestos may exist in ceiling materials and wall components. Non-friable asbestos may exist in the floor coverings, walls, and roofing components. These materials should not be disturbed unless it has been determined that they are non asbestos-containing. Alteration or removal of these products should be performed by a California Certified Asbestos Abatement Contractor.

Guidelines used for the inspection were established by the United States Environmental Protection Agency (U.S.EPA) in the following publications:

- GUIDANCE FOR CONTROLLING ACM IN BUILDINGS, Office of Pesticides Toxic Substances, DOC #560/5-85-024.

- FRIABLE ACM IN SCHOOLS IDENTIFICATION AND NOTIFICATION, Federal Register 40 CFR Part 763, May 27, 1982.

Avalon was unable to inspect the structures on the subject property. Based on a visual reconnaissance, it appears that most of the buildings are newly constructed, pre-fabricated structures. Based on the original date of construction, 2002, it is unlikely that friable ACMs exist in the subject property buildings. In order to verify or refute the presence of asbestos in suspect

building materials, a comprehensive asbestos survey should be performed. Asbestos surveys should be conducted by a Certified Asbestos Consultant.

8.0 FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

8.1 Findings

Based on information obtained during this assessment, Avalon identified the following significant findings:

- General Site Information - The subject property consists of a two parcels with a total area of approximately 200 acres. The subject property is located on the west side of 200th Street West and on the north and south sides of West Avenue B-8, in an undeveloped area of the County of Los Angeles. Most of the subject property consist of former farmland interspersed with natural vegetation. A portion of the subject property on the western portion of the subject property, north of Avenue B-8 has been developed with a farmstead consisting of a pre-manufactured single-family residence and a stable. Avalon was unable to inspect inside the subject property structure, however, a visual reconnaissance did not reveal any obvious environmental concerns. Water to the subject property appears to be from an onsite well and sewage appears to be disposed of into an onsite septic tank.

  Stained soil and a stained 10 foot by 18 foot concrete pad, with a petroleum odor, was noted in the northwestern area of the subject property, approximately 100 feet south of West Avenue B-8 and approximately 100 feet east of the western subject property boundary. In addition, a larger concrete pad is located approximately 150 feet south of the above described area. An unidentifiable pipe is protruding from the slab, which may indicate the presence of an Underground Storage Tank. The use of this pad could not be determined.

- Historical Site Information - The subject property has consisted of vacant farmland dating back to at least 1952. A structure was constructed on the northwestern portion of parcel 3256-006-013 between 1975 and 1989. The use of structure could not be determined, however, the concrete foundation still remains along with an attached electrical conduit and an unidentifiable pipe protruding from slab. In 2002, a pre-manufactured home and a barn were constructed on the southeastern portion of parcel 3256-006-012.

- Environmental Record Search - No areas of environmental concern were identified as part of the environmental radius search.

- Additional Analysis - Published data concerning the occurrence of radon in the subject property area indicates a low potential for concern.

8.2 Conclusions

Based upon the information reviewed during this site assessment, Avalon concludes the following:

- The subject property appears to have a Recognized Environmental Condition (REC) as defined by ASTM Standard E1527-05 due to the presence of stained soil and a concrete pad, with a petroleum odor.

- Avalon was unable to inspect the interiors of the structures on the subject property, however, based on the date of construction it is unlikely that friable ACMs exist in the subject property buildings.

8.3 Recommendations

Based on the above conclusion, Avalon recommends the following:

- Prior to any renovation or demolition activities, a Comprehensive Asbestos Survey should be conducted by a Certified Asbestos Consultant to identify possible ACMs present in the subject property buildings.

- Subsurface soil sampling should be conducted in the area of the stained soil and concrete pad and in the area of the unidentifiable pipe to determine if the subsurface of the subject property has been adversely impacted.

- The septic tank system on the subject property should be emptied prior to purchase.

9.0 LIMITATIONS TO THE REPORT

9.1 General Limitations to the Report

The findings, conclusions and recommendations of this report are limited by the contract technical requirements and the methods used to perform these services. These services have been performed in accordance with the standard Scope of Work for Phase I Environmental Site Assessments. In order to perform a comprehensive environmental evaluation, subsurface investigation and testing would be required to definitively determine if contamination has had an impact on the subject property. Therefore, the findings, conclusions and recommendations presented herein have been based solely on our visual observations, interview results and database reviews.

In preparing this report, Avalon has relied on information derived from secondary sources, computer databases and personal interviews. Except as set forth in this report, Avalon has made no independent investigation as to the accuracy and completeness of the information derived from secondary sources, computer databases or personal interviews, and has assumed that such information is accurate and complete.

Avalon has made no environmental determination for those properties which are listed in the Environmental FirstSearch Radius Report as unmapped, non-geocoded, or orphan sites.

All recommendations, findings and conclusions stated in this report are based upon facts, circumstances and industry accepted procedures for such services as they existed at the time that this report was prepared (e.g., federal, state and local laws, rules, regulations, market conditions, economic conditions, political climate and other applicable matters.) A change in any fact, circumstance or industry accepted procedure upon which this report is based, may adversely affect the recommendations, findings and conclusions expressed in this report.

This report has been prepared for the benefit of NRG Solar and may not be relied upon by any other person or entity without the written authorization of Avalon Environmental Consultants.

9.2 Limitations of Asbestos Observations

Guidelines used for typical asbestos surveys were established by the Environmental Protection Agency in the 1985 publication: GUIDANCE FOR CONTROLLING ACM IN BUILDINGS, OFFICES OF PESTICIDES AND TOXIC SUBSTANCES, DOC #560/5-85-024 and/or THE ASBESTOS SCHOOL OF HAZARD DETECTION AND CONTROL ACT OF 1980 (P.L. 96-270, EPA's 1982 publication: FRIABLE ACM IN PUBLIC SCHOOLS, IDENTIFICATION AND NOTIFICATION, published in FEDERAL REGISTER, 40 CFR PART 763, MAY 27, 1982, as well as the ASBESTOS HAZARD EMERGENCY RESPONSE ACT (AHERA) OF 1987. However, for this project these reference documents were used as guidelines only and the asbestos observations were not designed to be comprehensive in nature. The intent of these observations was to identify the potential sources of asbestos materials commonly encountered in commercial real estate.

9.3 Conflict Certification

Avalon Environmental Consultants has no present or contemplated future ownership interest or financial interest in the real estate that is the subject of this Environmental Assessment Report; and Avalon Environmental Consultants has no personal interest with respect to the subject matter of the Environmental Assessment Report or the parties involved, and Avalon Environmental Consultants has no relationship with the property or the owners thereof which would prevent an independent analysis of the environmental or other conditions of the property.

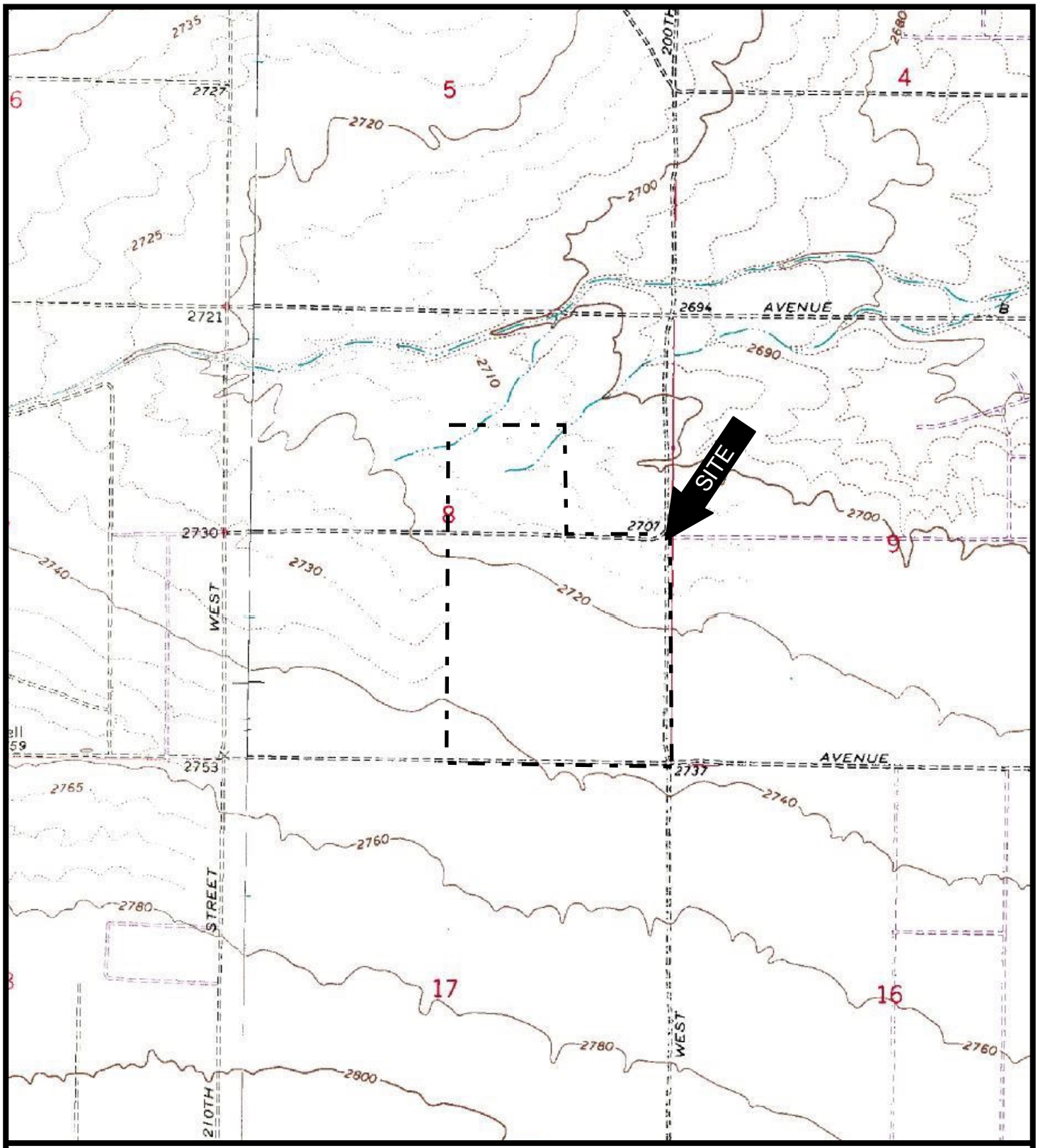
9.4 Declarations

I, Mohammad Navid, declare that, to the best of my professional knowledge and belief, I, meet the definition of Environmental Professional as defined in § 312.10 of 40 CFR Part 312, and have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed all the appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

APPENDICES

APPENDIX I

MAPS

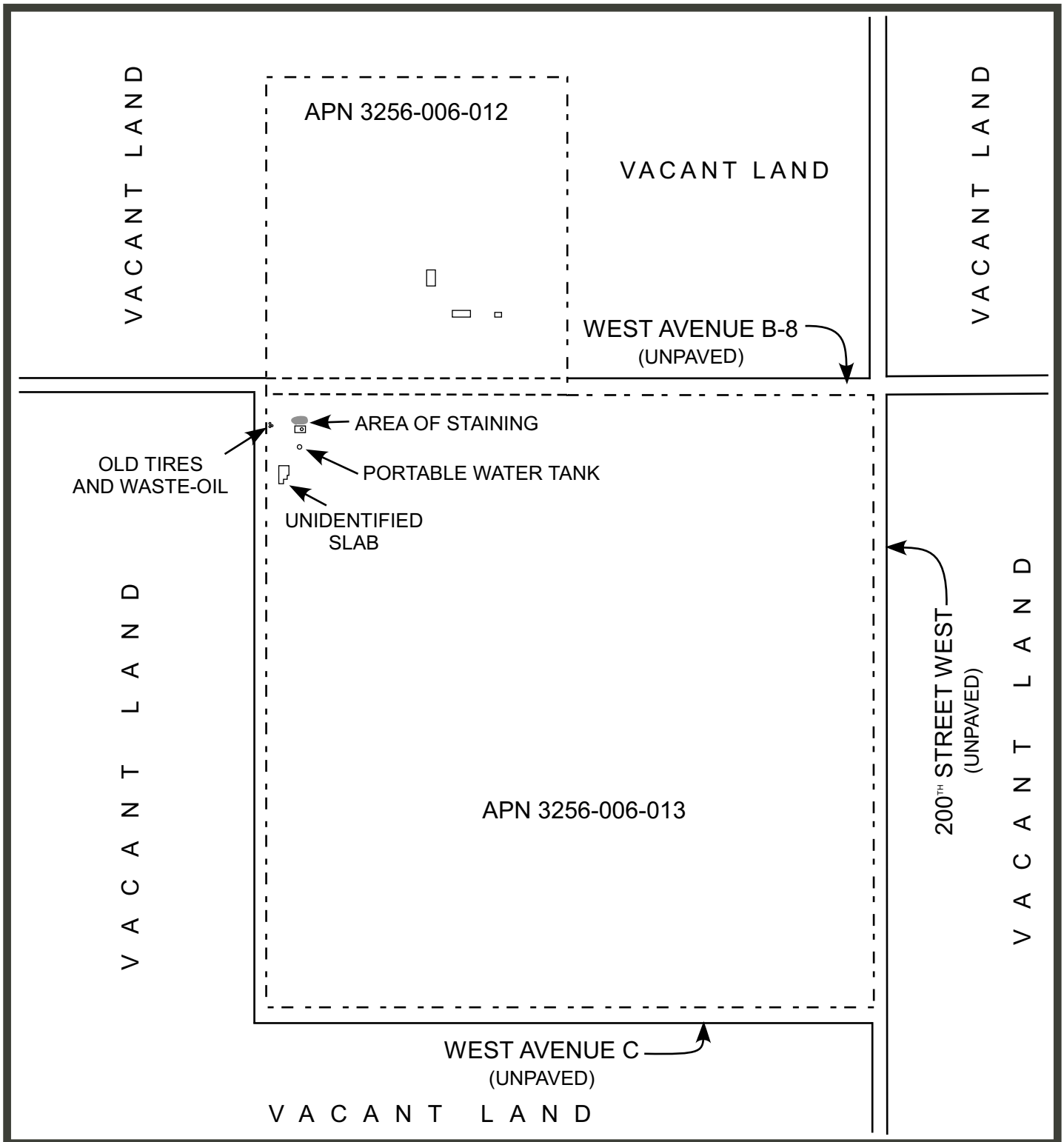


TOPOGRAPHY AND SITE LOCATION MAP

AVALON ENVIRONMENTAL CONSULTANTS
TUSTIN, CALIFORNIA

Source:
U.S.G.S., 7.5 Minute Series Topographic Maps: Fairmont Butte Quadrangle, California, 1995

N



SITE LOCATION PLAN

N

Site Address:	APNs 3256-006-012 & 013	Client Name:	NRG Solar
Site City/State:	Los Angeles County, California	Project No.:	0920-233-1

AVALON ENVIRONMENTAL CONSULTANTS
TUSTIN, CALIFORNIA

NOT TO SCALE

FIGURE 2

APPENDIX II

SCOPE OF WORK

Objectives and Scope of Work

The objective of the Phase I ESA is to provide a report that describes current site conditions as well as identify areas of potential concern regarding environmental liabilities.

The scope of work will include the following:

1. Visual examination of the subject property (walk-through of entire property.)
2. Determination of the current activities at the site.
3. Identification of all hazardous materials used on-site and wastes produced.
4. Review site history.
5. Review existing reports and regulatory agency correspondence.
6. Conclusion regarding the environmental condition of the site.

The Phase I ESA will be performed in accordance with **ASTM Standard Practice E1527-05** Guidance.

Methodology

A. Information Review

Four of the following resources will be used, as applicable, for this property to prepare the conclusions and recommendations of this report.

- Regulatory data base government records review on sites within a one mile radius of the subject property. This includes the US Environmental Protection Agency's National Priority List sites and state Superfund sites. A search of public records for permitted or suspected underground storage tank (UST) facilities. Leaking Underground Storage Tank sites (LUST). RCRA and CERCLA related site listings, federal and state landfill sites and other environmental issues within a one half mile radius,
- Review geologic and hydro-geologic data for the area,
- Review existing geologic and environmental reports for the subject property,
- Review of historic fire insurance maps, if available,
- Review of historic aerial photographs, if available,
- Review of historic city directory, if available, and
- Review of building permits, if available.

B. Site Inspection

The site inspection will include visual observations of the following:

- On-site chemical storage and use.
- Evidence of spills.
- Presence, potential, evidence of above ground/underground tank.
- Presence of potential asbestos containing materials.
- Adjacent property use.
- Surface soil appearance, potential risk or impact.
- Odors.
- Solid waste management.
- Potential for on-site/off-site releases; vapors, liquids, solids and potential risk to groundwater.

C. Reporting

Following completion of the information review and site visit, all information and data will be assessed and a report will be prepared describing the environmental condition of the site. Any need for an additional Phase II Environmental Site Assessment will be described and preliminary cost estimates for this work will be presented.

APPENDIX III

USER QUESTIONNAIRE

Avalon Environmental Consultants User Questionnaire

1. LOAN APPLICANT/BORROWER:
   Name: NOT APPLICABLE
   Street Address:
   City: State: Zip:
   Phone:

2. CURRENT PROPERTY OWNER:
   Name: Red Dawn Suntower LLC
   Street Address: 130 W Union Street
   City: Pasadena State: CA Zip: 91103
   Phone:

3. CURRENT PROPERTY TENANT(S):
   Name: not applicable
   Street Address:
   City: State: Zip:
   Phone:

4. PROPERTY LOCATION:
   Street Address: 20301 W Avenue B8
   City: Lancaster State: CA Zip: 93536
   County: Los Angeles Section, Township, Range:

AVALON ENVIRONMENTAL CONSULTANTS	Yes	No
(1.) Environmental cleanup liens that are filed or recorded against the site (40 CFR 312.25) Are you aware of any environmental cleanup liens against the property that are filed or recorded under federal, tribal, state or local law?		✓
(2.) Activity and land use limitations that are in place on the site or that have been filed or recorded in a registry (40 CFR 312.26) Are you aware of any Activity and Use Limitations (AULs), such as engineering controls, land use restrictions or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law?		✓
(3.) Specialized knowledge or experience of the person seeking to qualify for the Landowner Liability Protection (LLP) (40 CFR 312.28) As the user of this ESA do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?		✓
(4.) Relationship of the purchase price of the fair market value of the property if it were not contaminated (40 CFR 312.29) Does the purchase price being paid for this property reasonably reflect the fair market value of the property? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the property?	✓	

AVALON ENVIRONMENTAL CONSULTANTS

	Yes	No
(5.) Commonly known or reasonably ascertainable information about the property (40 CFR 312.30)		
Are you aware of commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example, as user,		
A. Do you know the past uses of the property?		✓
B. Do you know of specific chemicals that are present or once were present at the property?		✓
C. Do you know of spills or other chemical releases that have taken place at the property?		✓
D. Do you know of any environmental cleanups that have taken place at the property?		✓
(6.) The degree of obviousness of the presence of likely presence of contamination at the property, and the ability to detect the contamination by appropriate investigation (40 CFR 312.31)		
As the user of this ESA, based on your knowledge and experience related to the property are there any obvious indicators that point to the presence or likely presence of contamination at the property?		✓

Attach and/or include copies of all reports, findings, notifications, investigative studies or other clarifying comments relative to any question answered with Yes or needing further explanation.

Preparer represents that to the best of his/her knowledge the above statements and facts are true and correct and no material facts have been suppressed or misstated. The questionnaire was completed by:

Name: Michael Bass

Date: July 16, 2010

Michael Bass

Signature

APPENDIX IV

RADIUS REPORT

20301 West Avenue B 8
20301 West Avenue B 8
Lancaster, CA 93536

Inquiry Number: 2783581.2s
June 09, 2010

The EDR Radius Map™ Report with GeoCheck®

Prepared using the EDR FieldCheck® System

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION	PAGE
Executive Summary	ES1
Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	8
Orphan Summary	9
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting SSURGO Soil Map	A-5
Physical Setting Source Map	A-9
Physical Setting Source Map Findings	A-11
Physical Setting Source Records Searched	A-17

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

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EXECUTIVE SUMMARY

A search of the environmental records was conducted by Environmental Data Resources, Inc. (EDR). AVALON ENV. CONSULTANTS used the EDR FieldCheck System to review and/or revise the results of this search, based on independent data verification by AVALON ENV. CONSULTANTS. The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

20301 WEST AVENUE B 8
LANCASTER, CA 93536

COORDINATES

Latitude (North):	34.796400 - 34˚ 47' 47.0''
Longitude (West):	118.490100 - 118˚ 29' 24.4''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	363681.4
UTM Y (Meters):	3851279.8
Elevation:	2719 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	34118-G4 FAIRMONT BUTTE, CA
Most Recent Revision:	1974
West Map:	34118-G5 NEENACH SCHOOL, CA
Most Recent Revision:	1974

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	2006, 2005
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No sites were identified in following databases.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL---------- National Priority List

EXECUTIVE SUMMARY

Proposed NPL ..... Proposed National Priority List Sites
NPL LIENS ..... Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ..... National Priority List Deletions

Federal CERCLIS list

CERCLIS ..... Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ..... Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ..... CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ..... Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ..... RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ..... RCRA - Large Quantity Generators
RCRA-SQG ..... RCRA - Small Quantity Generators
RCRA-CESQG ..... RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ..... Engineering Controls Sites List
US INST CONTROL ..... Sites with Institutional Controls

Federal ERNS list

ERNS ..... Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ..... State Response Sites

State- and tribal - equivalent CERCLIS

AOCONCERN ..... San Gabriel Valley Areas of Concern
ENVIROSTOR ..... EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ..... Solid Waste Information System

State and tribal leaking storage tank lists

LUST ..... Geotracker's Leaking Underground Fuel Tank Report

SLIC ..... Statewide SLIC Cases
INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST ..... Active UST Facilities
AST ..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST ..... Underground Storage Tanks on Indian Land
FEMA UST ..... Underground Storage Tank Listing

State and tribal voluntary cleanup sites

VCP ..... Voluntary Cleanup Program Properties
INDIAN VCP ..... Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
ODI ..... Open Dump Inventory
WMUDS/SWAT ..... Waste Management Unit Database
SWRCY ..... Recycler Database
HAULERS ..... Registered Waste Tire Haulers Listing
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL ..... Clandestine Drug Labs
HIST Cal-Sites ..... Historical Calsites Database
SCH ..... School Property Evaluation Program
Toxic Pits ..... Toxic Pits Cleanup Act Sites
AOCONCERN ..... San Gabriel Valley Areas of Concern
CDL ..... Clandestine Drug Labs
US HIST CDL ..... National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

CA FID UST ..... Facility Inventory Database
HIST UST ..... Hazardous Substance Storage Container Database
SWEEPS UST ..... SWEEPS UST Listing

Local Land Records

LIENS 2 ..... CERCLA Lien Information
LUCIS ..... Land Use Control Information System
LIENS ..... Environmental Liens Listing
DEED ..... Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ..... Hazardous Materials Information Reporting System

CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing

Other Ascertainable Records

RCRA-NonGen	RCRA - Non Generators
DOT OPS	Incident and Accident Data
DOD	Department of Defense Sites
FUDS	Formerly Used Defense Sites
CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
MINES	Mines Master Index File
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
SSTS	Section 7 Tracking Systems
ICIS	Integrated Compliance Information System
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
RADINFO	Radiation Information Database
FINDS	Facility Index System/Facility Registry System
RAATS	RCRA Administrative Action Tracking System
CA BOND EXP. PLAN	Bond Expenditure Plan
NPDES	NPDES Permits Listing
CA WDS	Waste Discharge System
Cortese	"Cortese" Hazardous Waste & Substances Sites List
HIST CORTESE	Hazardous Waste & Substance Site List
Notify 65	Proposition 65 Records
LA Co. Site Mitigation	Site Mitigation List
DRYCLEANERS	Cleaner Facilities
LOS ANGELES CO. HMS	HMS: Street Number List
WIP	Well Investigation Program Case List
HAZNET	Facility and Manifest Data
EMI	Emissions Inventory Data
INDIAN RESERV	Indian Reservations
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
COAL ASH DOE	Sleam-Electric Plan Operation Data
PROC	Certified Processors Database
PCB TRANSFORMER	PCB Transformer Registration Database
FINANCIAL ASSURANCE	Financial Assurance Information Listing
MWMP	Medical Waste Management Program Listing

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants	EDR Proprietary Manufactured Gas Plants

EXECUTIVE SUMMARY

EDR Historical Auto Stations EDR Proprietary Historic Gas Stations
EDR Historical Cleaners EDR Proprietary Historic Dry Cleaners

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:

Site Name	Database(s)
PERRY MORGAN	HIST CORTESE, LUST
RAILROAD TRACKS LANCASTER	HIST CORTESE
AVENUE A UNAUTHORIZED DIS	HIST CORTESE
OLD ROSAMOND LANDFILL UNA	HIST CORTESE
MOHAVE-TROPICO RD UNAUTHO	HIST CORTESE
BONILLA TRANSPORT	HWT
TRACT 062998 LAS HADAS	NPDES
40TH ST WEST @ J 12	NPDES
LANCASTER SITE CLEARING & FENCING	NPDES
45TH ST W & AVE K SIGNAL	NPDES
TRACT #61535 1 & 61535	NPDES
HEIRLOOM ROSE	NPDES
90TH ST WEST AVE D TO AVE G ET AL	NPDES
ALISAL	NPDES
AVE E ETAL	NPDES
PROVIDENCE RNCH	NPDES
PUMP STATION	NPDES
CAMPO DEL SOL	NPDES
SO CALIF EDISON CO	NPDES, HAZNET
PETE KNIGHT VETERANS HOME	NPDES
AVENUE K & 47TH STREET WEST	NPDES
TRACT NO 062326	NPDES
LANCASTER TRACT NO 60294	NPDES
TRACT NO 060238	NPDES
ICON ESTATES TRACT #061733	NPDES
TR 060238 LANCASTER 37	NPDES
TENTATIVE TRACT MAP #061040 & #061041	NPDES
D & D WELDING	NPDES
SUNSET LANDING	NPDES
TRACT 53253	NPDES
PACIFIC TAPESTRY I	NPDES
TRACT 060430	NPDES
CAPISTRANO	NPDES
JAMESTOWN AT LANCASTER	NPDES
TRACT NO 060987	NPDES
TRUNK B SEWER EXTENTION	NPDES
GRANDIFLORA	NPDES
SANDSTARR WEST	NPDES
ALBERTSONS NO 6329	NPDES
RETAIL CENTER	NPDES
QUARTZ HILL SELF STORAGE EXPANSION	NPDES
ASHLAND CONSTRUCTION INC	SWEEPS UST
CAL MAT	SWEEPS UST
HEALY ENTERPRISES INC	SWEEPS UST, LOS ANGELES CO. HMS
HARTSHORN RANCH	SWEEPS UST
ECONO LUBE N TUNE	CA FID UST, SWEEPS UST
CALIF HWY PATROL	SWEEPS UST, LOS ANGELES CO. HMS
M & M MUFFLER	SWEEPS UST, LOS ANGELES CO. HMS
ROBERT DEBOLT	SWEEPS UST

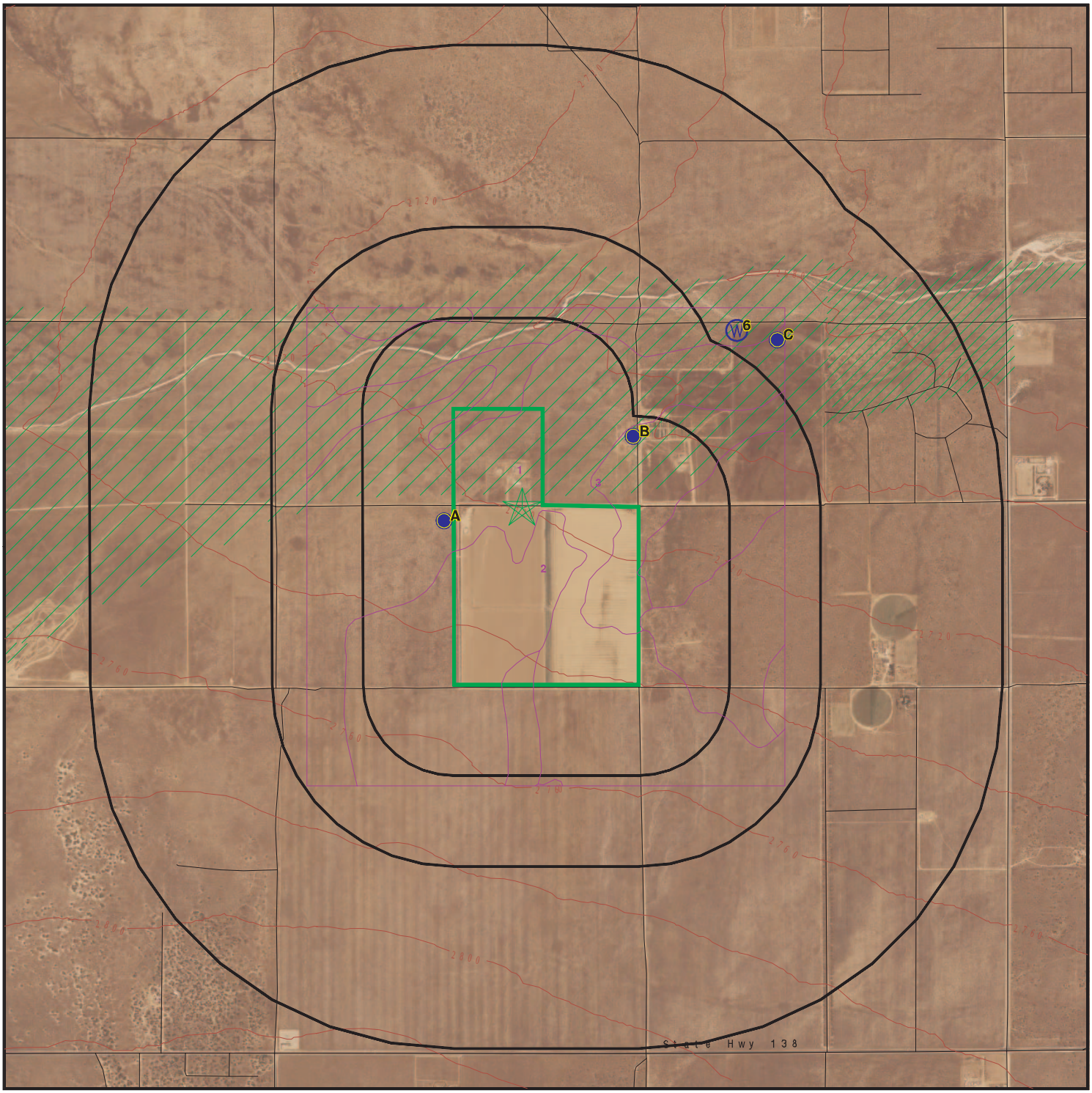
EXECUTIVE SUMMARY

CAL MAT	SWEEPS UST
HILLSIDE RESIDENTIAL INC	SWEEPS UST
CALLAS BROTHERS	SWEEPS UST
LANCASTER CITY PK REC BLDG	SWEEPS UST
JOHNSON FORD	SWEEPS UST
MAYFLOWER GARDENS	SWEEPS UST
ROSAMOND AIRPORT	SWEEPS UST
JOHN CALANDRI FARMS INC	SWEEPS UST
RITTER & GODDE RANCH	SWEEPS UST
NORTHROP CORPORATION, ADVANCED	SWEEPS UST
BEERY RANCH	SWEEPS UST
SINGAMAMMY CORP.	SWEEPS UST
46805 N 215TH ST W	CDL
50TH ST/W / AVE I/70 YDS N OF INTERS.	CDL
3995 W AVE H	CDL
4600 W AVE K-10	CDL
20006 W AVE F	CDL
8614 WEST AVENUE E 8	CDL
ON AVENUE G, BETWEEN 100 WEST / 110 WEST	CDL
1/4 MI E OF 80TH ST W / C STREET	CDL
ON NORTH 35TH STREET WEST AT AVENUE D	CDL
49536 20TH ST W	CDL
AVENUE A	CERC-NFRAP
SOUTHLAND CORP SS 15968	UST
JIM GOLTCHE PROPERTY	UST
BARNES BROS	HIST UST
210TH ST W/O AVE D	AST
5 MI NW OF HWY 138 & 300TH ST W	AST
45710 023RD ST W	AST
55 ST W / AVE L	AST
JOHN CALANDRI FARMS	AST
OSO PUMPING PLANT	HAZNET
OSO PUMPING PLANT	RCRA-SQG, HAZNET
THE SYGMA NETWORK INC	HAZNET
BP WEST COAST PRODUCTS LLC 05678	RCRA-SQG, FINDS, HAZNET
MIKE MAIDA	HAZNET
AUTOZONE #5403	HAZNET
HILL HOUSE APARTMENTS LLC	HAZNET
PEREZ AND CAMPANELLA	HAZNET
RETIREMENT HOUSING FOUNDATION	HAZNET
OSO PUMPING PLANT	HAZNET
ILLEGAL DRUG LAB/OPERATOR UNKNOWN	HAZNET
BILL MCELRATH	HAZNET
CNTY LOS ANGELES/RD 551	HAZNET
WESTSIDE BODY AND PAINT SHOP	HAZNET
A J C MGMT INC	HAZNET
LOS ANGELES COUNTY FIRE DEPARTMENT	HAZNET
LOS ANGELES COUNTY DEPT OF PUBLIC WORKS	HAZNET
RITE AID DISTRIBUTION CENTER 88	RCRA-SQG
JOSE M BONILLA DBA BONILLA TRANSPORT	RCRA-NonGen
A AND G TRANSPORTATION	RCRA-NonGen
BLACKSHIRE TRUCKING	RCRA-NonGen, FINDS
SOARING VISTA RANCH COMPOSTING	CA WDS
STANDARD PACIFIC HOMES	LOS ANGELES CO. HMS
INVESTIGATIONS-AREA4	LOS ANGELES CO. HMS

EXECUTIVE SUMMARY

LA CO MIRA LOMA BOYS CAMP	LOS ANGELES CO. HMS
GULF SERV STATION	LOS ANGELES CO. HMS
AVE I ARCO 26	LOS ANGELES CO. HMS
LAWERNCE A GODDE	LOS ANGELES CO. HMS
CAMEO RANCHING CO	LOS ANGELES CO. HMS
G & M OIL # 188	LOS ANGELES CO. HMS
LANE RANCH	LOS ANGELES CO. HMS
RITE AID	LOS ANGELES CO. HMS
TOV CHEVRON	LOS ANGELES CO. HMS
DENNYS RESTAURANT	LOS ANGELES CO. HMS
CALIFORNIA HIGHWAY PATROL	LOS ANGELES CO. HMS
DONALD SHUREEN	LOS ANGELES CO. HMS
LENTON CO INC	LOS ANGELES CO. HMS
3995 AVENUE H W	US CDL
SOUSK INC	SWRCY
CASTA DWR- CHECK SITE 44	EMI
DALE'S HITCHIN' STA INC	EMI
ANTELOPE VALLEY COLLEGE	EMI
DEL SUR SCHOOL	EMI
CASTA DWR- CHECK SITE 45	EMI
CASTA DWR- CHECK SITE 48	EMI
CASTA DWR- CHECK SITE 56	EMI
CASTA DWR- CHECK SITE 60	EMI
CASTA DWR- CHECK SITE 53	EMI
CASTA DWR- CHECK SITE 51	EMI
CASTA DWR- OSO PUMPING PLANT	EMI
CASTA DWR- CHECK SITE 59	EMI
JOE WALKER MIDDLE SCHOOL	EMI
LACO RD 551 ROAD MAINTENANCE YARD	EMI
OLD ROSAMOND LANDFILL UNAUTHORIZED DISP.	ENVIROSTOR
SWEETSER ROAD UNAUTHORIZED DISPOSAL SITE	ENVIROSTOR

OVERVIEW MAP - 2783581.2s



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA

Oil & Gas pipelines

100-year flood zone

500-year flood zone

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: 20301 West Avenue B 8 ADDRESS: 20301 West Avenue B 8 Lancaster CA 93536 LAT/LONG: 34.7964 / 118.4901	CLIENT: Avalon Env. Consultants CONTACT: Moe Navid INQUIRY #: 2783581.2s DATE: June 09, 2010 8:53 pm

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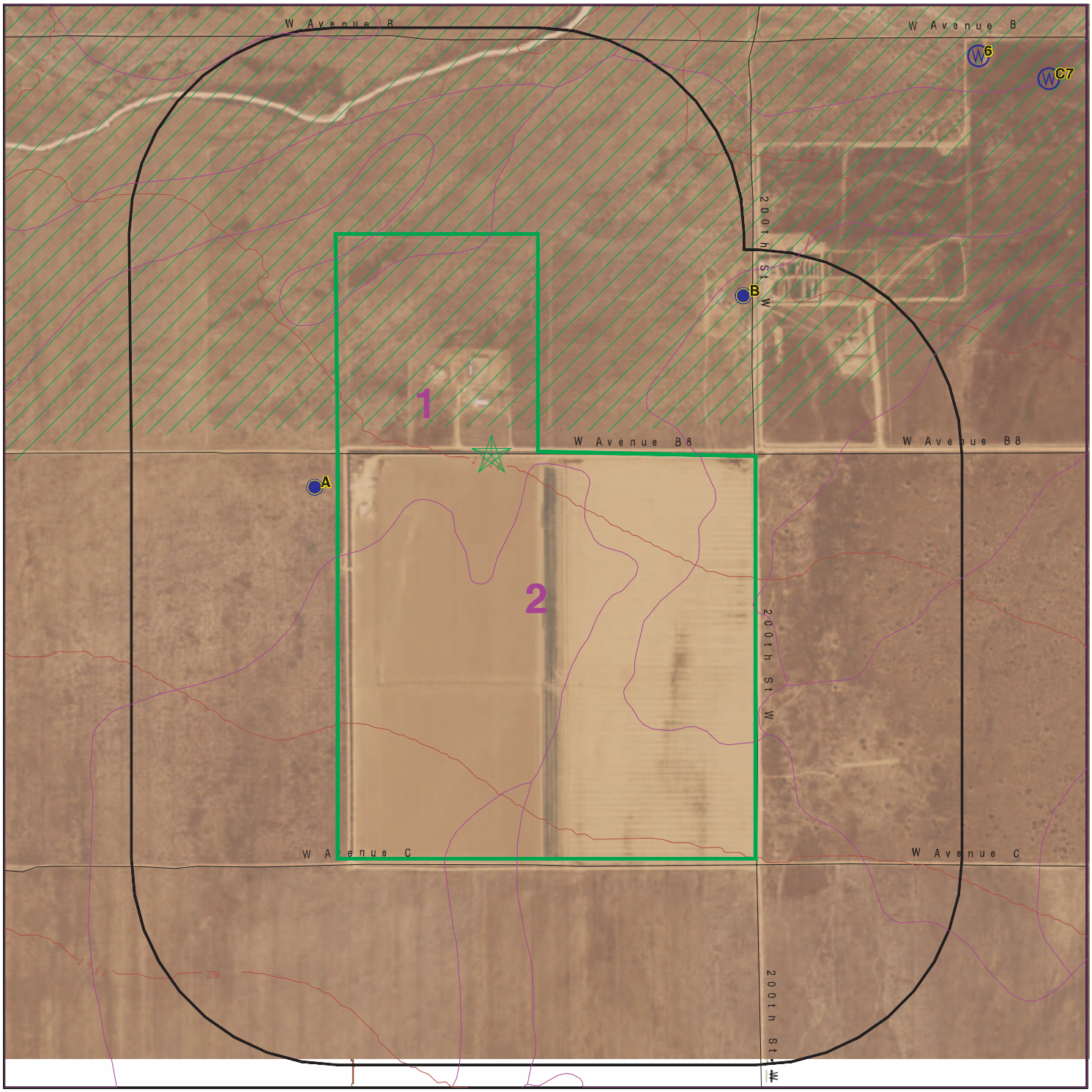
DETAIL MAP - 2783581.2s



0 1/8 1/4 1/2 Miles

Target Property
Sites at elevations higher than or equal to the target property
Sites at elevations lower than the target property
Manufactured Gas Plants
Sensitive Receptors
National Priority List Sites
Dept. Defense Sites

Indian Reservations BIA
Oil & Gas pipelines
100-year flood zone
500-year flood zone

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: 20301 West Avenue B 8	CLIENT: Avalon Env. Consultants
ADDRESS: 20301 West Avenue B 8 Lancaster CA 93536	CONTACT: Moe Navid INQUIRY #: 2783581.2s
LAT/LONG: 34.7964 / 118.4901	DATE: June 09, 2010 8:54 pm

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL		1.000	0	0	0	0	NR	0
Proposed NPL		1.000	0	0	0	0	NR	0
NPL LIENS		TP	NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL		1.000	0	0	0	0	NR	0
Federal CERCLIS list								
CERCLIS		0.500	0	0	0	NR	NR	0
FEDERAL FACILITY		1.000	0	0	0	0	NR	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP		0.500	0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS		1.000	0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF		0.500	0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG		0.250	0	0	NR	NR	NR	0
RCRA-SQG		0.250	0	0	NR	NR	NR	0
RCRA-CESQG		0.250	0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS		0.500	0	0	0	NR	NR	0
US INST CONTROL		0.500	0	0	0	NR	NR	0
Federal ERNS list								
ERNS		TP	NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE		1.000	0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
AOCONCERN		1.000	0	0	0	0	NR	0
ENVIROSTOR		1.000	0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF		0.500	0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST		0.500	0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
SLIC		0.500	0	0	0	NR	NR	0
INDIAN LUST		0.500	0	0	0	NR	NR	0
State and tribal registered storage tank lists								
UST		0.250	0	0	NR	NR	NR	0
AST		0.250	0	0	NR	NR	NR	0
INDIAN UST		0.250	0	0	NR	NR	NR	0
FEMA UST		0.250	0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP		0.500	0	0	0	NR	NR	0
INDIAN VCP		0.500	0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS		0.500	0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
DEBRIS REGION 9		0.500	0	0	0	NR	NR	0
ODI		0.500	0	0	0	NR	NR	0
WMUDS/SWAT		0.500	0	0	0	NR	NR	0
SWRCY		0.500	0	0	0	NR	NR	0
HAULERS		TP	NR	NR	NR	NR	NR	0
INDIAN ODI		0.500	0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL		TP	NR	NR	NR	NR	NR	0
HIST Cal-Sites		1.000	0	0	0	0	NR	0
SCH		0.250	0	0	NR	NR	NR	0
Toxic Pits		1.000	0	0	0	0	NR	0
AOCONCERN		1.000	0	0	0	0	NR	0
CDL		TP	NR	NR	NR	NR	NR	0
US HIST CDL		TP	NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
CA FID UST		0.250	0	0	NR	NR	NR	0
HIST UST		0.250	0	0	NR	NR	NR	0
SWEEPS UST		0.250	0	0	NR	NR	NR	0
Local Land Records								
LIENS 2		TP	NR	NR	NR	NR	NR	0
LUCIS		0.500	0	0	0	NR	NR	0
LIENS		TP	NR	NR	NR	NR	NR	0
DEED		0.500	0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS		TP	NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CHMIRS		TP	NR	NR	NR	NR	NR	0
LDS		TP	NR	NR	NR	NR	NR	0
MCS		TP	NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA-NonGen		0.250	0	0	NR	NR	NR	0
DOT OPS		TP	NR	NR	NR	NR	NR	0
DOD		1.000	0	0	0	0	NR	0
FUDS		1.000	0	0	0	0	NR	0
CONSENT		1.000	0	0	0	0	NR	0
ROD		1.000	0	0	0	0	NR	0
UMTRA		0.500	0	0	0	NR	NR	0
MINES		0.250	0	0	NR	NR	NR	0
TRIS		TP	NR	NR	NR	NR	NR	0
TSCA		TP	NR	NR	NR	NR	NR	0
FTTS		TP	NR	NR	NR	NR	NR	0
HIST FTTS		TP	NR	NR	NR	NR	NR	0
SSTS		TP	NR	NR	NR	NR	NR	0
ICIS		TP	NR	NR	NR	NR	NR	0
PADS		TP	NR	NR	NR	NR	NR	0
MLTS		TP	NR	NR	NR	NR	NR	0
RADINFO		TP	NR	NR	NR	NR	NR	0
FINDS		TP	NR	NR	NR	NR	NR	0
RAATS		TP	NR	NR	NR	NR	NR	0
CA BOND EXP. PLAN		1.000	0	0	0	0	NR	0
NPDES		TP	NR	NR	NR	NR	NR	0
CA WDS		TP	NR	NR	NR	NR	NR	0
Cortese		0.500	0	0	0	NR	NR	0
HIST CORTESE		0.500	0	0	0	NR	NR	0
Notify 65		1.000	0	0	0	0	NR	0
LA Co. Site Mitigation		TP	NR	NR	NR	NR	NR	0
DRYCLEANERS		0.250	0	0	NR	NR	NR	0
LOS ANGELES CO. HMS		TP	NR	NR	NR	NR	NR	0
WIP		0.250	0	0	NR	NR	NR	0
HAZNET		TP	NR	NR	NR	NR	NR	0
EMI		TP	NR	NR	NR	NR	NR	0
INDIAN RESERV		1.000	0	0	0	0	NR	0
SCRD DRYCLEANERS		0.500	0	0	0	NR	NR	0
HWP		1.000	0	0	0	0	NR	0
HWT		0.250	0	0	NR	NR	NR	0
COAL ASH EPA		0.500	0	0	0	NR	NR	0
COAL ASH DOE		TP	NR	NR	NR	NR	NR	0
PROC		0.500	0	0	0	NR	NR	0
PCB TRANSFORMER		TP	NR	NR	NR	NR	NR	0
FINANCIAL ASSURANCE		TP	NR	NR	NR	NR	NR	0
MWMP		0.250	0	0	NR	NR	NR	0
EDR PROPRIETARY RECORDS								
EDR Proprietary Records								
Manufactured Gas Plants		1.000	0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR Historical Auto Stations		0.250	0	0	NR	NR	NR	0
EDR Historical Cleaners		0.250	0	0	NR	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

NO SITES FOUND

City	EDR ID	Site Name	Site Address	Zip	Database(s)
GORMAN	S107620404	CASTA DWR- CHECK SITE 44	CHECK 44 AT LANCASTER RD / 235TH W.	93536	EMI
LANCASTER	S106922903	ASHLAND CONSTRUCTION INC	42330 W 010TH ST		SWEEPS UST
LANCASTER	S108752062	OSO PUMPING PLANT	HWY 138 / 300TH ST W	93536	HAZNET
LANCASTER	1007200748	OSO PUMPING PLANT	HWY 138 / 300 ST WEST	93536	RCRA-SQG, HAZNET
LANCASTER	S106923762	CAL MAT	155TH AT HIGHWAY 138		SWEEPS UST
LANCASTER	A100344732		210TH ST W/O AVE D	93536	AST
LANCASTER	S107534323		46805 N 215TH ST W		CDL
LANCASTER	S109461429	TRACT 062998 LAS HADAS	32ND ST W BTWN AVE M / AVE L 12	93536	NPDES
LANCASTER	S109434721	40TH ST WEST @ J 12	40TH ST W @ J 12		NPDES
LANCASTER	S109692875	LANCASTER SITE CLEARING & FENCING	47002 N 45TH ST W	93536	NPDES
LANCASTER	S109691592	45TH ST W & AVE K SIGNAL	45TH ST W / AVE K	93536	NPDES
LANCASTER	S109461410	TRACT #61535 1 & 61535	45TH ST W / AVE J		NPDES
LANCASTER	S108756511	THE SYGMA NETWORK INC	46905 W 47TH ST	93536	HAZNET
LANCASTER	S107534607		50TH ST/W / AVE I/70 YDS N OF INTERS.		CDL
LANCASTER	S109445582	HEIRLOOM ROSE	60TH ST W / AVE K	93536	NPDES
LANCASTER	S109435204	90TH ST WEST AVE D TO AVE G ET AL	90TH ST W AVE D TO AVE G AVE K 90TH ST TO 85T	93536	NPDES
LANCASTER	S108240065	STANDARD PACIFIC HOMES	46204 W 97TH ST		LOS ANGELES CO. HMS
LANCASTER	S102056126	INVESTIGATIONS-AREA4	46204 W 97TH ST		LOS ANGELES CO. HMS
LANCASTER	1010783724	JOSE M BONILLA DBA BONILLA TRANSPORT	5037 W AV K 10	93536	RCRA-NonGen
LANCASTER	S106829712	DALE'S HITCHIN' STA INC	2357 W AV I	93536	EMI
LANCASTER	S106826009	ANTELOPE VALLEY COLLEGE	3041 W AV K	93534	EMI
LANCASTER	S105034022	HEALY ENTERPRISES INC	7200 W AVE H		SWEEPS UST, LOS ANGELES CO. H
LANCASTER	S105696517	LA CO MIRA LOMA BOYS CAMP	5300 W AVE I		LOS ANGELES CO. HMS
LANCASTER	S104586626	SOARING VISTA RANCH COMPOSTING	AVE A 140 ST W.	0	CA WDS
LANCASTER	1012176226	RITE AID DISTRIBUTION CENTER 88	2801 W AVE H	93536	RCRA-SQG
LANCASTER	U003059009	GULF SERV STATION	2003 W AVE I		LOS ANGELES CO. HMS
LANCASTER	S109435724	ALISAL	AVE J / 50TH ST W	93535	NPDES
LANCASTER	U004048953	SOUTHLAND CORP SS 15968	3210 W AVE L	93536	UST
LANCASTER	S109436798	AVE E ETAL	AVE E SIERRA HWY AVE A AVE G		NPDES
LANCASTER	S105421890	AVE I ARCO 26	2008 W AVE I		LOS ANGELES CO. HMS
LANCASTER	S109455061	PROVIDENCE RNCH	AVE J / 50TH ST W	93535	NPDES
LANCASTER	S109455096	PUMP STATION	AVE H / 62ND ST W	93536	NPDES
LANCASTER	U001586663	BARNES BROS	27011 W. AVE C-6	93534	HIST UST
LANCASTER	S105035006	LAWERNCE A GODDE	6510 W AVE L		LOS ANGELES CO. HMS
LANCASTER	S105035000	CAMEO RANCHING CO	8539 W AVE H		LOS ANGELES CO. HMS
LANCASTER	1004677714	BP WEST COAST PRODUCTS LLC 05678	2008 W AVE I	93534	RCRA-SQG, FINDS, HAZNET
LANCASTER	S109690966	G & M OIL # 188	4163 W AVE L		LOS ANGELES CO. HMS
LANCASTER	S106927135	HARTSHORN RANCH	10455 W AVE B		SWEEPS UST
LANCASTER	S109438724	CAMPO DEL SOL	AVE K / 52ND ST W	93536	NPDES
LANCASTER	S107533632		3995 W AVE H	93536	CDL
LANCASTER	S101585955	ECONO LUBE N TUNE	2101 W AVE J	92658	CA FID UST, SWEEPS UST
LANCASTER	S107534268		4600 W AVE K-10	93536	CDL
LANCASTER	S102060302	LANE RANCH	5800 W AVE L		LOS ANGELES CO. HMS

City	EDR ID	Site Name	Site Address	Zip	Database(s)
LANCASTER	S108147456	RITE AID	2801 W AVE H		LOS ANGELES CO. HMS
LANCASTER	S107530511		20006 W AVE F		CDL
LANCASTER	S109691136	TOV CHEVRON	1860 W AVE I		LOS ANGELES CO. HMS
LANCASTER	S104535977	DENNYS RESTAURANT	1028 W AVE I		LOS ANGELES CO. HMS
LANCASTER	S104535979	CALIF HWY PATROL	2041 W AVE I		SWEEPS UST, LOS ANGELES CO. H
LANCASTER	S104570415	MIKE MAIDA	4358 W AVE L	93536	HAZNET
LANCASTER	S104535980	CALIFORNIA HIGHWAY PATROL	2041 W AVE I		LOS ANGELES CO. HMS
LANCASTER	S105053264	DONALD SHUREEN	3201 W AVE L		LOS ANGELES CO. HMS
LANCASTER	S104568573	SO CALIF EDISON CO	9634 W AVE J	93534	NPDES, HAZNET
LANCASTER	S109454154	PETE KNIGHT VETERANS HOME	3101 W AVE I	93356	NPDES
LANCASTER	S103317789	M & M MUFFLER	2003 W AVE I	93536	SWEEPS UST, LOS ANGELES CO. H
LANCASTER	S108198402	AUTOZONE #5403	4007 AVE L W	93536	HAZNET
LANCASTER	S105024379	PERRY MORGAN	7362 AVE G W	93536	HIST CORTESE, LUST
LANCASTER	S106920709	DEL SUR SCHOOL	9023 W. AVE. H	93536	EMI
LANCASTER	S109436818	AVENUE K & 47TH STREET WEST	AVENUE K / 47TH STREET WEST		NPDES
LANCASTER	S109427163	HILL HOUSE APARTMENTS LLC	5040 W AVENUE L-14	93536	HAZNET
LANCASTER	S109517407	BONILLA TRANSPORT	5037 WEST AVENUE K-10	93536	HWT
LANCASTER	S102827506	PEREZ AND CAMPANELLA	8750 WEST AVENUE E-8	93536	HAZNET
LANCASTER	S107536758		8614 WEST AVENUE E 8	91355	CDL
LANCASTER	S107539709		ON AVENUE G, BETWEEN 100 WEST / 110 WEST	93536	CDL
LANCASTER	S109462562	TRACT NO 062326	AVENUE K 8 / 27TH STREET WEST	93536	NPDES
LANCASTER	S109928267	RETIREMENT HOUSING FOUNDATION	6570 AVENUE M	93536	HAZNET
LANCASTER	1012055833	3995 AVENUE H W	3995 AVENUE H W		US CDL
LANCASTER	S109448156	LANCASTER TRACT NO 60294	AVENUE J / 65TH STREET WEST		NPDES
LANCASTER	S107620405	CASTA DWR- CHECK SITE 45	CHECK 45 AT LANCASTER RD / 195TH W.	93536	EMI
LANCASTER	S107620408	CASTA DWR- CHECK SITE 48	CHECK 48 AT LANCASTER RD / 195TH W.	93536	EMI
LANCASTER	S107620416	CASTA DWR- CHECK SITE 56	CHECK 56 AT CALIF. AQUADUCT/HWY 138	93536	EMI
LANCASTER	S107620419	CASTA DWR- CHECK SITE 60	CHECK 60 AT CALIF. AQUADUCT/HWY 138	93536	EMI
LANCASTER	S107620413	CASTA DWR- CHECK SITE 53	CHECK 53 AT LANCASTER RD / 195TH W.	93536	EMI
LANCASTER	S107620411	CASTA DWR- CHECK SITE 51	CHECK 51 AT LANCASTER RD / 195TH W.	93536	EMI
LANCASTER	S109462553	TRACT NO 060238	NW CORNER LANCASTER BLVD / 30TH ST W	93536	NPDES
LANCASTER	S107526619		1/4 MI E OF 80TH ST W / C STREET	93536	CDL
LANCASTER	S106931466	ROBERT DEBOLT	41021 W N 038TH ST		SWEEPS UST
LANCASTER	S106923763	CAL MAT	42332 W N FOURTH ST		SWEEPS UST
LANCASTER	1009398227	A AND G TRANSPORTATION	44943 W N 15TH ST	93539	RCRA-NonGen
LANCASTER	S106927305	HILLSIDE RESIDENTIAL INC	42826 W N 025TH ST		SWEEPS UST
LANCASTER	S106923895	CALLAS BROTHERS	44854 W N 010TH ST		SWEEPS UST
LANCASTER	S106928508	LANCASTER CITY PK REC BLDG	43011 W N 010TH ST		SWEEPS UST
LANCASTER	S106927960	JOHNSON FORD	45640 W N 023RD ST		SWEEPS UST
LANCASTER	S103980307	OSO PUMPING PLANT	5 MI NE OF HWY 138 / 300TH ST	93536	HAZNET
LANCASTER	S109446463	ICON ESTATES TRACT #061733	NEC OF AVE L4 / 27TH ST W	93536	NPDES
LANCASTER	S109461272	TR 060238 LANCASTER 37	NEC LANCASTER BLVD / 30TH ST W	93566	NPDES
LANCASTER	S107539974		ON NORTH 35TH STREET WEST AT AVENUE D	93536	CDL
LANCASTER	A100345193		5 MI NW OF HWY 138 & 300TH ST W	93536	AST
LANCASTER	S109460608	TENTATIVE TRACT MAP #061040 & #061041	NWC AVE L / 55TH ST W	93536	NPDES
LANCASTER	S109441193	D & D WELDING	NWC AVENUE L I2 / 7TH ST E		NPDES
LANCASTER	S109460024	SUNSET LANDING	SE OF INTERSECTION OF 45 ST W / AVENUE I	93536	NPDES

City	EDR ID	Site Name	Site Address	Zip	Database(s)
LANCASTER	S109462254	TRACT 53253	S OF AVE M 4 BETW 30TH / 32ND ST W		NPDES
LANCASTER	S109453293	PACIFIC TAPESTRY I	SW OF AVE J 8 / 45TH ST W	93536	NPDES
LANCASTER	S109461420	TRACT 060430	SE OF 37TH STREET WEST / AVENUE J 12		NPDES
LANCASTER	S109438858	CAPISTRANO	330 SE OFF INT AVE K8 / 60TH ST WEST	93536	NPDES
LANCASTER	S105024397	RAILROAD TRACKS LANCASTER	SIERRA HWY / AVE H		HIST CORTESE
LANCASTER	S109446937	JAMESTOWN AT LANCASTER	32 W ST BTW J6 / J8		NPDES
LANCASTER	S107534500		49536 20TH ST W	93536	CDL
LANCASTER	S109462558	TRACT NO 060987	52 52ND ST W / AVENUE J	93536	NPDES
LANCASTER	A100345163		45710 023RD ST W	93536	AST
LANCASTER	S109463149	TRUNK B SEWER EXTENTION	30 30TH ST. EAST (AVENUE I TO LANCASTER BLVD.) /		NPDES
LANCASTER	S109444838	GRANDIFLORA	60 60TH STREET WEST / AVENUE K 4	93536	NPDES
LANCASTER	S109457313	SANDSTARR WEST	27 ST W / AVE K8	93536	NPDES
LANCASTER	S107620401	CASTA DWR- OSO PUMPING PLANT	300 ST WEST/HWY 138	93534	EMI
LANCASTER	S105422204	LENTON CO INC	4995 W WILLIAM J BARNES AVE		LOS ANGELES CO. HMS
PALMDALE	S103678194	ILLEGAL DRUG LAB/OPERATOR UNKNOWN	AVENUE T, 175TH ST EAST	93536	HAZNET
PALMDALE	S109435656	ALBERTSONS NO 6329	SWC AVE N / 50TH ST W	93536	NPDES
PEARBLOSSOM	S107620418	CASTA DWR- CHECK SITE 59	CHECK 59 AT CALIF. AQUADUCT/HWY 138	93536	EMI
QUARTZ HILL	S105086337	BILL MCELRATH	4306 W AVE L	93536	HAZNET
QUARTZ HILL	1004677183	BLACKSHIRE TRUCKING	4318 W AVE L 2	93536	RCRA-NonGen, FINDS
QUARTZ HILL	S109455876	RETAIL CENTER	4609 W AVE L	93536	NPDES
QUARTZ HILL	S103957875	CNTY LOS ANGELES/RD 551	4859 W AVE L-12	93534	HAZNET
QUARTZ HILL	S108225354	WESTSIDE BODY AND PAINT SHOP	5054 W AVE M-2	93536	HAZNET
QUARTZ HILL	S106920975	JOE WALKER MIDDLE SCHOOL	5632 W. AVE L-8	83536	EMI
QUARTZ HILL	S109455166	QUARTZ HILL SELF STORAGE EXPANSION	5030 W AVE M	93536	NPDES
QUARTZ HILL	S104568616	A J C MGMT INC	5130 W AVE M	93536	HAZNET
QUARTZ HILL	S107149750	LOS ANGELES COUNTY FIRE DEPARTMENT	5030 W AVE L-14 -STATION 084	93536	HAZNET
QUARTZ HILL	S103975334	LOS ANGELES COUNTY DEPT OF PUBLIC WORKS	4859 W AVE L-12	93534	HAZNET
QUARTZ HILL	S109850989	SOUSK INC	4540 W AVE L	93536	SWRCY
QUARTZ HILL	S108432323	LACO RD 551 ROAD MAINTENANCE YARD	4859 W. AVENUE L-12	93534	EMI
QUARTZ HILL	S106929227	MAYFLOWER GARDENS	6570 W AVENUE L-12	93536	SWEEPS UST
QUARTZ HILL	A100345231		55 ST W / AVE L	93535	AST
ROMOLAND	S105025908	AVENUE A UNAUTHORIZED DIS	AVE A 11/2 MI E. HWY 14	93560	HIST CORTESE
ROMOLAND	S105025917	OLD ROSAMOND LANDFILL UNA	T9N R12W S15 W. 1/2	93560	HIST CORTESE
ROMOLAND	S105025918	MOHAVE-TROPICO RD UNAUTHO	T9N R13W S11 W. 1/4	93560	HIST CORTESE
ROSAMOND	S106931586	ROSAMOND AIRPORT	040TH ST W / ROSAMON BLVD	93560	SWEEPS UST
ROSAMOND	S106927871	JOHN CALANDRI FARMS INC	065TH ST W / GASKELL	93560	SWEEPS UST
ROSAMOND	S106931403	RITTER & GODDE RANCH	090TH ST W / AVE A	93560	SWEEPS UST
ROSAMOND	U004113238	JIM GOLTCHE PROPERTY	110 W 130 W ROSAMOND BLVD	93560	UST
ROSAMOND	S106929982	NORTHROP CORPORATION, ADVANCED	170TH ST W ROSAMOND	93560	SWEEPS UST
ROSAMOND	A100338715	JOHN CALANDRI FARMS	W 65TH ST AND GASKELL	93560	AST
ROSAMOND	S106923210	BEERY RANCH	7531 W GASKELL	93560	SWEEPS UST
ROSAMOND	S100457900	OLD ROSAMOND LANDFILL UNAUTHORIZED DISP.	T9N, R12W, S15, W 1/2	93560	ENVIROSTOR
ROSAMOND	S106932256	SINGAMAMMY CORP.	STAR RT 1 BOX 352	93560	SWEEPS UST
ROSAMOND	S100714218	SWEETSER ROAD UNAUTHORIZED DISPOSAL SITE	SWEETSER RD NEAR HWY 14 / FRONTAGE RD	93560	ENVIROSTOR
ROSAMOND	1003879424	AVENUE A	1/2 MI W OF W 10TH ST ALONG AVENUE A	93560	CERC-NFRAP

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 03/31/2010
Date Data Arrived at EDR: 04/02/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 10

Source: EPA
Telephone: N/A
Last EDR Contact: 05/07/2010
Next Scheduled EDR Contact: 07/26/2010
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 03/31/2010
Date Data Arrived at EDR: 04/02/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 10

Source: EPA
Telephone: N/A
Last EDR Contact: 05/07/2010
Next Scheduled EDR Contact: 07/26/2010
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 05/17/2010
Next Scheduled EDR Contact: 08/30/2010
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 03/31/2010	Source: EPA
Date Data Arrived at EDR: 04/02/2010	Telephone: N/A
Date Made Active in Reports: 04/12/2010	Last EDR Contact: 05/07/2010
Number of Days to Update: 10	Next Scheduled EDR Contact: 07/26/2010
	Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 01/29/2010	Source: EPA
Date Data Arrived at EDR: 02/09/2010	Telephone: 703-412-9810
Date Made Active in Reports: 04/12/2010	Last EDR Contact: 05/07/2010
Number of Days to Update: 62	Next Scheduled EDR Contact: 07/12/2010
	Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of NPL and Base Realighnment & Closure sites found in the CERCLIS database where FERRO is involved in cleanup projects.

Date of Government Version: 06/23/2009	Source: Environmental Protection Agency
Date Data Arrived at EDR: 01/15/2010	Telephone: 703-603-8704
Date Made Active in Reports: 02/10/2010	Last EDR Contact: 04/30/2010
Number of Days to Update: 26	Next Scheduled EDR Contact: 07/26/2010
	Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 06/23/2009	Source: EPA
Date Data Arrived at EDR: 09/02/2009	Telephone: 703-412-9810
Date Made Active in Reports: 09/21/2009	Last EDR Contact: 05/07/2010
Number of Days to Update: 19	Next Scheduled EDR Contact: 06/14/2010
	Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/25/2010	Source: EPA
Date Data Arrived at EDR: 03/31/2010	Telephone: 800-424-9346
Date Made Active in Reports: 05/27/2010	Last EDR Contact: 05/17/2010
Number of Days to Update: 57	Next Scheduled EDR Contact: 08/30/2010
	Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 02/17/2010
Date Data Arrived at EDR: 02/19/2010
Date Made Active in Reports: 05/17/2010
Number of Days to Update: 87

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/29/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 02/17/2010
Date Data Arrived at EDR: 02/19/2010
Date Made Active in Reports: 05/17/2010
Number of Days to Update: 87

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/29/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 02/17/2010
Date Data Arrived at EDR: 02/19/2010
Date Made Active in Reports: 05/17/2010
Number of Days to Update: 87

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/29/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 02/17/2010
Date Data Arrived at EDR: 02/19/2010
Date Made Active in Reports: 05/17/2010
Number of Days to Update: 87

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/29/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 12/20/2009
Date Data Arrived at EDR: 01/20/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/15/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 12/20/2009
Date Data Arrived at EDR: 01/20/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/15/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 01/22/2010
Date Made Active in Reports: 02/11/2010
Number of Days to Update: 20

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 04/07/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 05/11/2010
Date Data Arrived at EDR: 05/12/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 6

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/12/2010
Next Scheduled EDR Contact: 08/23/2010
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 05/11/2010
Date Data Arrived at EDR: 05/12/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 6

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/12/2010
Next Scheduled EDR Contact: 08/23/2010
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System
Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/22/2010
Date Data Arrived at EDR: 02/24/2010
Date Made Active in Reports: 03/04/2010
Number of Days to Update: 8

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/25/2010
Next Scheduled EDR Contact: 09/06/2010
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 03/29/2010
Next Scheduled EDR Contact: 07/12/2010
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 03/15/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 05/17/2010
Next Scheduled EDR Contact: 08/30/2010
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 04/05/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Quarterly

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 06/07/2010
Next Scheduled EDR Contact: 09/20/2010
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 04/19/2010
Next Scheduled EDR Contact: 08/02/2010
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 03/22/2010
Next Scheduled EDR Contact: 07/05/2010
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 05/05/2010
Date Data Arrived at EDR: 05/05/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 13

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 05/05/2010
Next Scheduled EDR Contact: 07/05/2010
Data Release Frequency: Quarterly

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 04/19/2010
Next Scheduled EDR Contact: 08/02/2010
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/05/2010
Date Data Arrived at EDR: 05/05/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 13

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 05/05/2010
Next Scheduled EDR Contact: 07/05/2010
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 03/22/2010
Next Scheduled EDR Contact: 07/05/2010
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 04/19/2010
Next Scheduled EDR Contact: 08/02/2010
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 04/05/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 03/15/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 05/17/2010
Next Scheduled EDR Contact: 08/30/2010
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 05/17/2010
Next Scheduled EDR Contact: 08/30/2010
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 03/15/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 05/10/2010
Next Scheduled EDR Contact: 08/23/2010
Data Release Frequency: Annually

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 05/04/2010
Date Data Arrived at EDR: 05/05/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 22

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 02/19/2009
Date Data Arrived at EDR: 02/19/2009
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 25

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 02/25/2010
Date Data Arrived at EDR: 02/25/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 46

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 05/03/2010
Date Data Arrived at EDR: 05/05/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 22

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 03/10/2010
Date Data Arrived at EDR: 03/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 27

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Semi-Annually

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 02/01/2010
Date Data Arrived at EDR: 03/03/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 03/24/2009
Date Data Arrived at EDR: 05/20/2009
Date Made Active in Reports: 06/17/2009
Number of Days to Update: 28

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/04/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Varies

State and tribal registered storage tank lists

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 05/05/2010
Date Data Arrived at EDR: 05/05/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 13

Source: SWRCB
Telephone: 916-480-1028
Last EDR Contact: 05/05/2010
Next Scheduled EDR Contact: 07/05/2010
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
Registered Aboveground Storage Tanks.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 09/10/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 916-341-5712
Last EDR Contact: 04/12/2010
Next Scheduled EDR Contact: 07/26/2010
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 05/04/2010
Date Data Arrived at EDR: 05/05/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 22

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 02/01/2010
Date Data Arrived at EDR: 03/03/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 40

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 02/25/2010
Date Data Arrived at EDR: 02/25/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 46

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/01/2008
Date Data Arrived at EDR: 12/30/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 76

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/12/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 05/03/2010
Date Data Arrived at EDR: 05/05/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 22

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 02/11/2010
Date Data Arrived at EDR: 02/11/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 60

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 03/10/2010
Date Data Arrived at EDR: 03/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 27

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 02/19/2009
Date Data Arrived at EDR: 02/19/2009
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 25

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/19/2010
Next Scheduled EDR Contact: 08/02/2010
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 05/11/2010
Date Data Arrived at EDR: 05/12/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 6

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/12/2010
Next Scheduled EDR Contact: 08/23/2010
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 04/02/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 04/05/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 03/02/2010
Date Data Arrived at EDR: 03/23/2010
Date Made Active in Reports: 05/17/2010
Number of Days to Update: 55

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/23/2010
Next Scheduled EDR Contact: 07/12/2010
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-972-3336
Last EDR Contact: 06/07/2010
Next Scheduled EDR Contact: 09/20/2010
Data Release Frequency: Varies

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 05/17/2010
Next Scheduled EDR Contact: 08/30/2010
Data Release Frequency: Quarterly

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 01/06/2010
Date Data Arrived at EDR: 03/24/2010
Date Made Active in Reports: 04/09/2010
Number of Days to Update: 16

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/24/2010
Next Scheduled EDR Contact: 07/05/2010
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 03/09/2010
Date Data Arrived at EDR: 03/10/2010
Date Made Active in Reports: 04/09/2010
Number of Days to Update: 30

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 06/07/2010
Next Scheduled EDR Contact: 09/06/2010
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 06/08/2010
Next Scheduled EDR Contact: 08/23/2010
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 08/19/2009
Date Data Arrived at EDR: 12/29/2009
Date Made Active in Reports: 02/10/2010
Number of Days to Update: 43

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/08/2010
Next Scheduled EDR Contact: 09/20/2010
Data Release Frequency: Quarterly

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 05/11/2010
Date Data Arrived at EDR: 05/12/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 6

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/12/2010
Next Scheduled EDR Contact: 08/23/2010
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 02/25/2010
Date Made Active in Reports: 03/04/2010
Number of Days to Update: 7

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/05/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Lists of Registered Storage Tanks

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 8

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 06/07/2010
Next Scheduled EDR Contact: 09/20/2010
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SWEEPS UST: SWEEPS UST Listing
Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/05/2010
Date Data Arrived at EDR: 02/11/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 60

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Varies

LUCIS: Land Use Control Information System
LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/24/2010
Next Scheduled EDR Contact: 09/06/2010
Data Release Frequency: Varies

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 05/05/2010
Date Data Arrived at EDR: 05/07/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 11

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/02/2010
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/15/2010
Date Data Arrived at EDR: 03/16/2010
Date Made Active in Reports: 04/09/2010
Number of Days to Update: 24

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/16/2010
Next Scheduled EDR Contact: 12/28/2009
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 04/06/2010
Date Data Arrived at EDR: 04/07/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 50

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 04/07/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 05/09/2008
Date Made Active in Reports: 06/20/2008
Number of Days to Update: 42

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 05/05/2010
Date Data Arrived at EDR: 05/05/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 13

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 05/05/2010
Next Scheduled EDR Contact: 07/05/2010
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 05/05/2010
Date Data Arrived at EDR: 05/05/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 13

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 05/05/2010
Next Scheduled EDR Contact: 07/05/2010
Data Release Frequency: Quarterly

Other Ascertainable Records

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 02/17/2010
Date Data Arrived at EDR: 02/19/2010
Date Made Active in Reports: 05/17/2010
Number of Days to Update: 87

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/29/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/12/2010
Date Data Arrived at EDR: 02/09/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 62

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/12/2010
Next Scheduled EDR Contact: 08/23/2010
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 703-692-8801
Last EDR Contact: 04/21/2010
Next Scheduled EDR Contact: 08/02/2010
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 09/30/2009
Date Made Active in Reports: 12/01/2009
Number of Days to Update: 62

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 03/18/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 04/11/2010
Date Data Arrived at EDR: 04/19/2010
Date Made Active in Reports: 05/17/2010
Number of Days to Update: 28

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/05/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 04/29/2010
Date Data Arrived at EDR: 05/07/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 20

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 05/07/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 01/05/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 05/08/2009
Number of Days to Update: 1

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 06/01/2010
Next Scheduled EDR Contact: 09/13/2010
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/12/2010
Date Data Arrived at EDR: 03/10/2010
Date Made Active in Reports: 05/17/2010
Number of Days to Update: 68

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 06/09/2010
Next Scheduled EDR Contact: 09/20/2010
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 01/13/2010
Date Made Active in Reports: 02/18/2010
Number of Days to Update: 36

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 06/04/2010
Next Scheduled EDR Contact: 09/13/2010
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2002
Date Data Arrived at EDR: 04/14/2006
Date Made Active in Reports: 05/30/2006
Number of Days to Update: 46

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 04/21/2010
Next Scheduled EDR Contact: 07/12/2010
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 06/01/2010
Next Scheduled EDR Contact: 09/13/2010
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 06/01/2010
Next Scheduled EDR Contact: 09/13/2010
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 01/06/2010
Date Made Active in Reports: 02/10/2010
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 04/24/2010
Date Data Arrived at EDR: 04/29/2010
Date Made Active in Reports: 05/17/2010
Number of Days to Update: 18

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 03/29/2010
Next Scheduled EDR Contact: 07/12/2010
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 09/01/2009
Date Data Arrived at EDR: 10/21/2009
Date Made Active in Reports: 12/01/2009
Number of Days to Update: 41

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/22/2010
Next Scheduled EDR Contact: 08/02/2010
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/18/2010
Date Data Arrived at EDR: 04/06/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 51

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 03/15/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 04/13/2010
Date Data Arrived at EDR: 04/14/2010
Date Made Active in Reports: 05/17/2010
Number of Days to Update: 33

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/14/2010
Next Scheduled EDR Contact: 07/26/2010
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/14/2010
Date Data Arrived at EDR: 04/16/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 41

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 03/15/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 02/25/2010
Date Made Active in Reports: 05/12/2010
Number of Days to Update: 76

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 05/25/2010
Next Scheduled EDR Contact: 09/06/2010
Data Release Frequency: Biennially

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CA WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 06/01/2010
Next Scheduled EDR Contact: 09/13/2010
Data Release Frequency: Quarterly

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 02/22/2010
Date Data Arrived at EDR: 02/24/2010
Date Made Active in Reports: 03/04/2010
Number of Days to Update: 8

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/25/2010
Next Scheduled EDR Contact: 09/06/2010
Data Release Frequency: Quarterly

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites). This listing is no longer updated by the state agency.

Date of Government Version: 04/05/2010
Date Data Arrived at EDR: 04/07/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 41

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 04/07/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES].

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NOTIFY 65: Proposition 65 Records

Proposition 65 Notification Records. NOTIFY 65 contains facility notifications about any release which could impact drinking water and thereby expose the public to a potential health risk.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/29/2010
Next Scheduled EDR Contact: 07/12/2010
Data Release Frequency: No Update Planned

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 12/22/2009
Date Data Arrived at EDR: 01/25/2010
Date Made Active in Reports: 01/29/2010
Number of Days to Update: 4

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 03/15/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 04/14/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 10/21/2009
Date Made Active in Reports: 10/28/2009
Number of Days to Update: 7

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/26/2010
Next Scheduled EDR Contact: 08/02/2010
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 07/14/2009
Date Made Active in Reports: 07/23/2009
Number of Days to Update: 9

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 04/09/2010
Next Scheduled EDR Contact: 07/12/2010
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/21/2010
Next Scheduled EDR Contact: 08/02/2010
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 02/10/2010
Date Data Arrived at EDR: 02/11/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 60

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/10/2010
Next Scheduled EDR Contact: 08/09/2010
Data Release Frequency: Varies

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 01/06/2010
Date Data Arrived at EDR: 03/24/2010
Date Made Active in Reports: 04/09/2010
Number of Days to Update: 16

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/24/2010
Next Scheduled EDR Contact: 07/05/2010
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 02/24/2010
Date Data Arrived at EDR: 03/17/2010
Date Made Active in Reports: 04/09/2010
Number of Days to Update: 23

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 03/15/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 04/21/2010
Next Scheduled EDR Contact: 08/02/2010
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 11/09/2009
Date Data Arrived at EDR: 12/18/2009
Date Made Active in Reports: 02/10/2010
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/16/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: Varies

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/21/2010
Date Data Arrived at EDR: 04/21/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 27

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/21/2010
Next Scheduled EDR Contact: 08/02/2010
Data Release Frequency: Quarterly

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action (a??cleanupsa??) tracked in EnviroStor.

Date of Government Version: 05/11/2010
Date Data Arrived at EDR: 05/12/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 6

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/12/2010
Next Scheduled EDR Contact: 08/23/2010
Data Release Frequency: Quarterly

FINANCIAL ASSURANCE 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 03/09/2010
Date Data Arrived at EDR: 03/10/2010
Date Made Active in Reports: 04/09/2010
Number of Days to Update: 30

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 06/07/2010
Next Scheduled EDR Contact: 09/06/2010
Data Release Frequency: Varies

FINANCIAL ASSURANCE: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 03/01/2007
Date Data Arrived at EDR: 06/01/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 28

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 05/05/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/21/2010
Next Scheduled EDR Contact: 08/02/2010
Data Release Frequency: N/A

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 01/01/2008
Date Data Arrived at EDR: 02/18/2009
Date Made Active in Reports: 05/29/2009
Number of Days to Update: 100

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/14/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Varies

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Historical Auto Stations: EDR Proprietary Historic Gas Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Historical Cleaners: EDR Proprietary Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/12/2010
Date Data Arrived at EDR: 04/14/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 34

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/05/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 04/12/2010
Date Data Arrived at EDR: 04/14/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 34

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/05/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 02/10/2010
Date Data Arrived at EDR: 02/11/2010
Date Made Active in Reports: 02/18/2010
Number of Days to Update: 7

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 05/24/2010
Next Scheduled EDR Contact: 08/23/2010
Data Release Frequency: Semi-Annually

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 04/15/2010
Date Data Arrived at EDR: 04/16/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 32

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 04/16/2010
Next Scheduled EDR Contact: 08/02/2010
Data Release Frequency: Semi-Annually

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing

Kern County Sites and Tanks Listing.

Date of Government Version: 03/16/2010
Date Data Arrived at EDR: 03/17/2010
Date Made Active in Reports: 04/14/2010
Number of Days to Update: 28

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 05/17/2010
Next Scheduled EDR Contact: 08/30/2010
Data Release Frequency: Quarterly

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern

San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 03/29/2010
Next Scheduled EDR Contact: 07/12/2010
Data Release Frequency: No Update Planned

HMS: Street Number List

Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 04/13/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 35

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/19/2010
Next Scheduled EDR Contact: 08/02/2010
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities

Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/23/2010
Date Data Arrived at EDR: 04/26/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 22

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/23/2010
Next Scheduled EDR Contact: 08/09/2010
Data Release Frequency: Varies

City of Los Angeles Landfills

Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/05/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 05/27/2010
Next Scheduled EDR Contact: 09/06/2010
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 02/09/2010
Date Data Arrived at EDR: 02/12/2010
Date Made Active in Reports: 03/04/2010
Number of Days to Update: 20

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/22/2010
Next Scheduled EDR Contact: 08/09/2010
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 04/28/2010
Date Data Arrived at EDR: 04/29/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 19

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/23/2010
Next Scheduled EDR Contact: 08/09/2010
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/19/2010
Date Data Arrived at EDR: 04/21/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 27

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/19/2010
Next Scheduled EDR Contact: 08/02/2010
Data Release Frequency: Semi-Annually

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 04/19/2010
Date Data Arrived at EDR: 04/30/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 18

Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 04/12/2010
Next Scheduled EDR Contact: 07/26/2010
Data Release Frequency: Semi-Annually

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 07/09/2008
Date Data Arrived at EDR: 07/09/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 22

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 06/07/2010
Next Scheduled EDR Contact: 09/20/2010
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 06/07/2010
Next Scheduled EDR Contact: 09/20/2010
Data Release Frequency: No Update Planned

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 12/02/2009
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 03/04/2010
Number of Days to Update: 16

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/18/2010
Next Scheduled EDR Contact: 08/30/2010
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 02/03/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 03/04/2010
Number of Days to Update: 16

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/18/2010
Next Scheduled EDR Contact: 08/30/2010
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 02/03/2010
Date Data Arrived at EDR: 02/12/2010
Date Made Active in Reports: 02/23/2010
Number of Days to Update: 11

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/28/2010
Next Scheduled EDR Contact: 08/30/2010
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 03/16/2010
Date Data Arrived at EDR: 03/17/2010
Date Made Active in Reports: 04/09/2010
Number of Days to Update: 23

Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 03/15/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/19/2010
Date Data Arrived at EDR: 04/19/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 29

Source: Department of Public Health
Telephone: 951-358-5055
Last EDR Contact: 03/29/2010
Next Scheduled EDR Contact: 07/12/2010
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 04/19/2010
Date Data Arrived at EDR: 04/19/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 29

Source: Health Services Agency
Telephone: 951-358-5055
Last EDR Contact: 03/29/2010
Next Scheduled EDR Contact: 07/12/2010
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 04/01/2010
Date Data Arrived at EDR: 04/15/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 33

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/12/2010
Next Scheduled EDR Contact: 07/26/2010
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 03/03/2010
Date Data Arrived at EDR: 04/16/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 32

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/12/2010
Next Scheduled EDR Contact: 07/26/2010
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 03/16/2010
Date Data Arrived at EDR: 03/17/2010
Date Made Active in Reports: 04/09/2010
Number of Days to Update: 23

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 05/17/2010
Next Scheduled EDR Contact: 08/30/2010
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database
The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 07/16/2008
Date Data Arrived at EDR: 10/29/2008
Date Made Active in Reports: 11/26/2008
Number of Days to Update: 28

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 03/31/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: Quarterly

Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 10/01/2009
Date Data Arrived at EDR: 12/04/2009
Date Made Active in Reports: 01/18/2010
Number of Days to Update: 45

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Varies

Environmental Case Listing
The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 12/15/2009
Date Made Active in Reports: 01/18/2010
Number of Days to Update: 34

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 03/16/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: Varies

SAN FRANCISCO COUNTY:

Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 05/17/2010
Next Scheduled EDR Contact: 08/30/2010
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 03/26/2010
Date Data Arrived at EDR: 04/30/2010
Date Made Active in Reports: 05/10/2010
Number of Days to Update: 10

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 05/17/2010
Next Scheduled EDR Contact: 08/30/2010
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 10/14/2009
Date Data Arrived at EDR: 10/15/2009
Date Made Active in Reports: 11/02/2009
Number of Days to Update: 18

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/29/2010
Next Scheduled EDR Contact: 07/12/2010
Data Release Frequency: Semi-Annually

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 04/20/2010
Date Data Arrived at EDR: 04/21/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 27

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/22/2010
Next Scheduled EDR Contact: 07/05/2010
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/22/2010
Date Data Arrived at EDR: 03/23/2010
Date Made Active in Reports: 04/09/2010
Number of Days to Update: 17

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/22/2010
Next Scheduled EDR Contact: 07/05/2010
Data Release Frequency: Semi-Annually

SANTA CLARA COUNTY:

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 05/29/2009
Date Data Arrived at EDR: 06/01/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 14

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 06/07/2010
Next Scheduled EDR Contact: 09/20/2010
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 08/31/2009
Date Data Arrived at EDR: 08/31/2009
Date Made Active in Reports: 09/18/2009
Number of Days to Update: 18

Source: City of San Jose Fire Department
Telephone: 408-277-4659
Last EDR Contact: 06/01/2010
Next Scheduled EDR Contact: 08/30/2010
Data Release Frequency: Annually

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 03/11/2010
Date Data Arrived at EDR: 03/16/2010
Date Made Active in Reports: 04/09/2010
Number of Days to Update: 24

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/07/2010
Next Scheduled EDR Contact: 09/20/2010
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/11/2010
Date Data Arrived at EDR: 03/16/2010
Date Made Active in Reports: 04/14/2010
Number of Days to Update: 29

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/08/2010
Next Scheduled EDR Contact: 09/20/2010
Data Release Frequency: Quarterly

SONOMA COUNTY:

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 04/06/2010
Date Data Arrived at EDR: 04/07/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 41

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 04/05/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 04/01/2009
Date Data Arrived at EDR: 04/02/2009
Date Made Active in Reports: 04/09/2009
Number of Days to Update: 7

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 04/13/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 01/26/2010
Date Data Arrived at EDR: 02/25/2010
Date Made Active in Reports: 03/04/2010
Number of Days to Update: 7

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 02/23/2010
Next Scheduled EDR Contact: 09/06/2010
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 10/05/2009
Date Made Active in Reports: 10/13/2009
Number of Days to Update: 8

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/03/2010
Next Scheduled EDR Contact: 08/16/2010
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2010
Next Scheduled EDR Contact: 09/06/2010
Data Release Frequency: Quarterly

Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 03/05/2010
Date Data Arrived at EDR: 03/24/2010
Date Made Active in Reports: 04/14/2010
Number of Days to Update: 21

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/24/2010
Next Scheduled EDR Contact: 07/05/2010
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 04/07/2010
Date Data Arrived at EDR: 04/13/2010
Date Made Active in Reports: 05/18/2010
Number of Days to Update: 35

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 03/29/2010
Next Scheduled EDR Contact: 07/12/2010
Data Release Frequency: Annually

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 08/26/2009
Date Made Active in Reports: 09/11/2009
Number of Days to Update: 16

Source: Department of Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 06/04/2010
Next Scheduled EDR Contact: 09/06/2010
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 01/20/2010
Date Made Active in Reports: 02/05/2010
Number of Days to Update: 16

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/23/2010
Next Scheduled EDR Contact: 08/02/2010
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/04/2010
Date Data Arrived at EDR: 02/11/2010
Date Made Active in Reports: 03/17/2010
Number of Days to Update: 34

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/13/2010
Next Scheduled EDR Contact: 08/23/2010
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 12/01/2009
Date Made Active in Reports: 12/14/2009
Number of Days to Update: 13

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 05/24/2010
Next Scheduled EDR Contact: 09/06/2010
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 11/03/2009
Date Data Arrived at EDR: 02/12/2010
Date Made Active in Reports: 02/22/2010
Number of Days to Update: 10

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 06/01/2010
Next Scheduled EDR Contact: 09/13/2010
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 07/17/2009
Date Made Active in Reports: 08/10/2009
Number of Days to Update: 24

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/22/2010
Next Scheduled EDR Contact: 07/05/2010
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: PennWell Corporation
Telephone: (800) 823-6277
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2009 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

20301 WEST AVENUE B 8
20301 WEST AVENUE B 8
LANCASTER, CA 93536

TARGET PROPERTY COORDINATES

Latitude (North):	34.79640 - 34˚ 47’ 47.0’’
Longitude (West):	118.4901 - 118˚ 29’ 24.3’’
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	363681.4
UTM Y (Meters):	3851279.8
Elevation:	2719 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	34118-G4 FAIRMONT BUTTE, CA
Most Recent Revision:	1974
West Map:	34118-G5 NEENACH SCHOOL, CA
Most Recent Revision:	1974

EDR’s GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

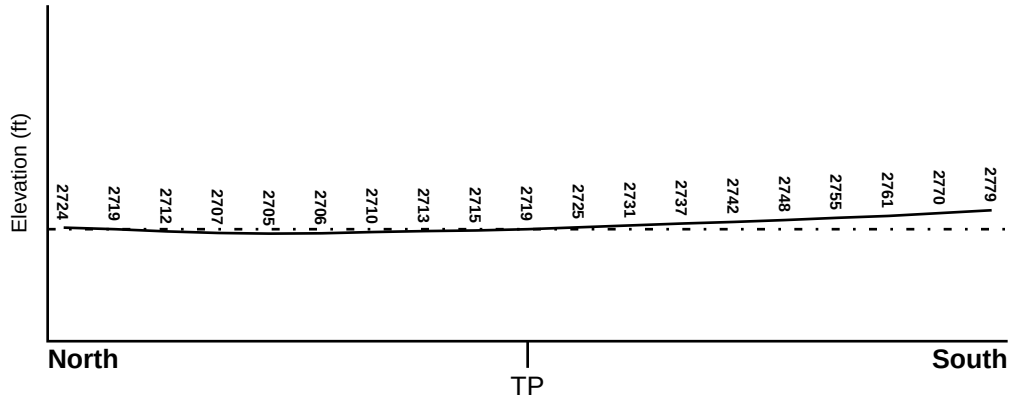
TOPOGRAPHIC INFORMATION

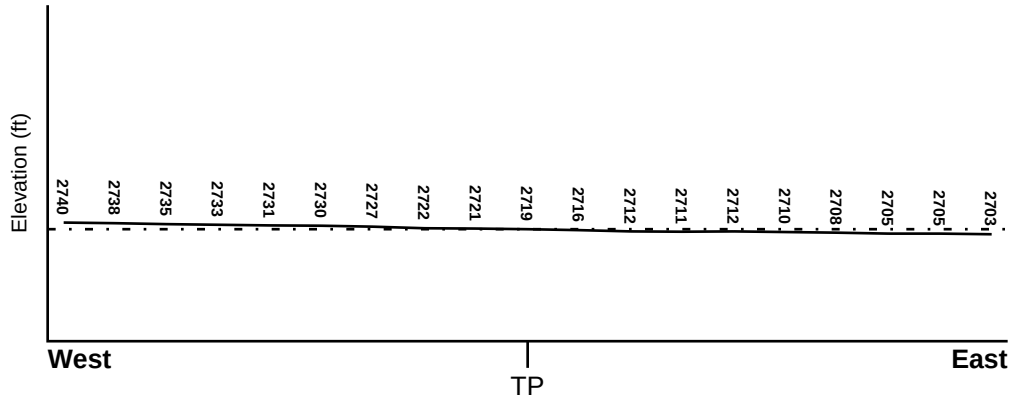
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General NNE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 2719 ft.

0 1/2 1 Miles

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
LOS ANGELES, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 06037C - FEMA DFIRM Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
FAIRMONT BUTTE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius: 1.25 miles
Status: Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

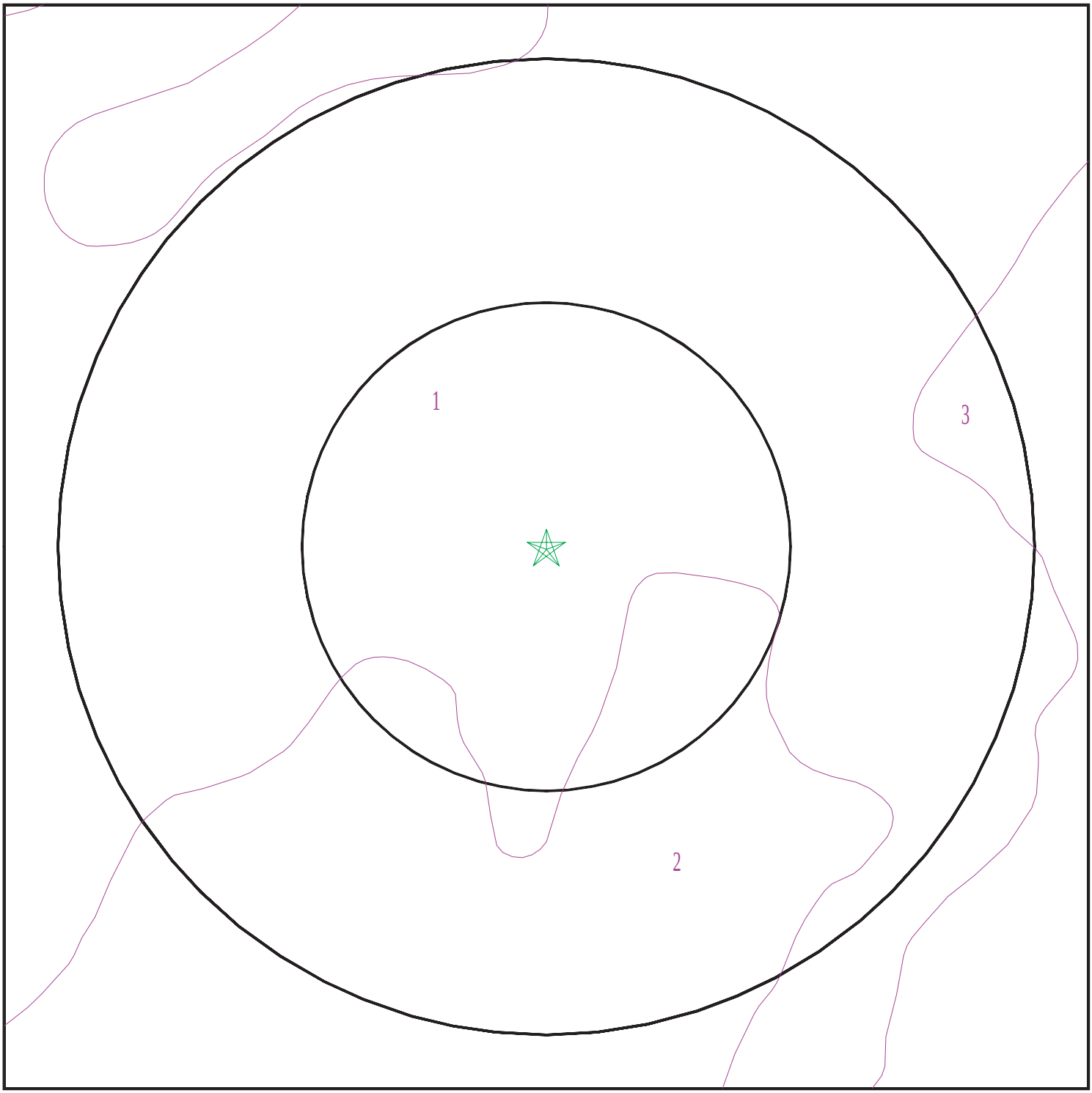
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 2783581.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME: 20301 West Avenue B 8 ADDRESS: 20301 West Avenue B 8 Lancaster CA 93536 LAT/LONG: 34.7964 / 118.4901	CLIENT: Avalon Env. Consultants CONTACT: Moe Navid INQUIRY #: 2783581.2s DATE: June 09, 2010 8:54 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Greenfield

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
2	20 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
3	59 inches	79 inches	stratified loamy sand to coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 2

Soil Component Name: Hanford

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.6
2	7 inches	38 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.6
3	38 inches	70 inches	gravelly loamy coarse sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.6

Soil Map ID: 3

Soil Component Name: Vernalis

Soil Surface Texture: loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 6.6
2	14 inches	35 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 6.6
3	35 inches	59 inches	stratified sandy loam to silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 6.6

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	USGS3157915	1/8 - 1/4 Mile WSW
B3	USGS3157932	1/4 - 1/2 Mile NE
B5	USGS3157931	1/4 - 1/2 Mile ENE
C8	USGS3157954	1/2 - 1 Mile ENE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

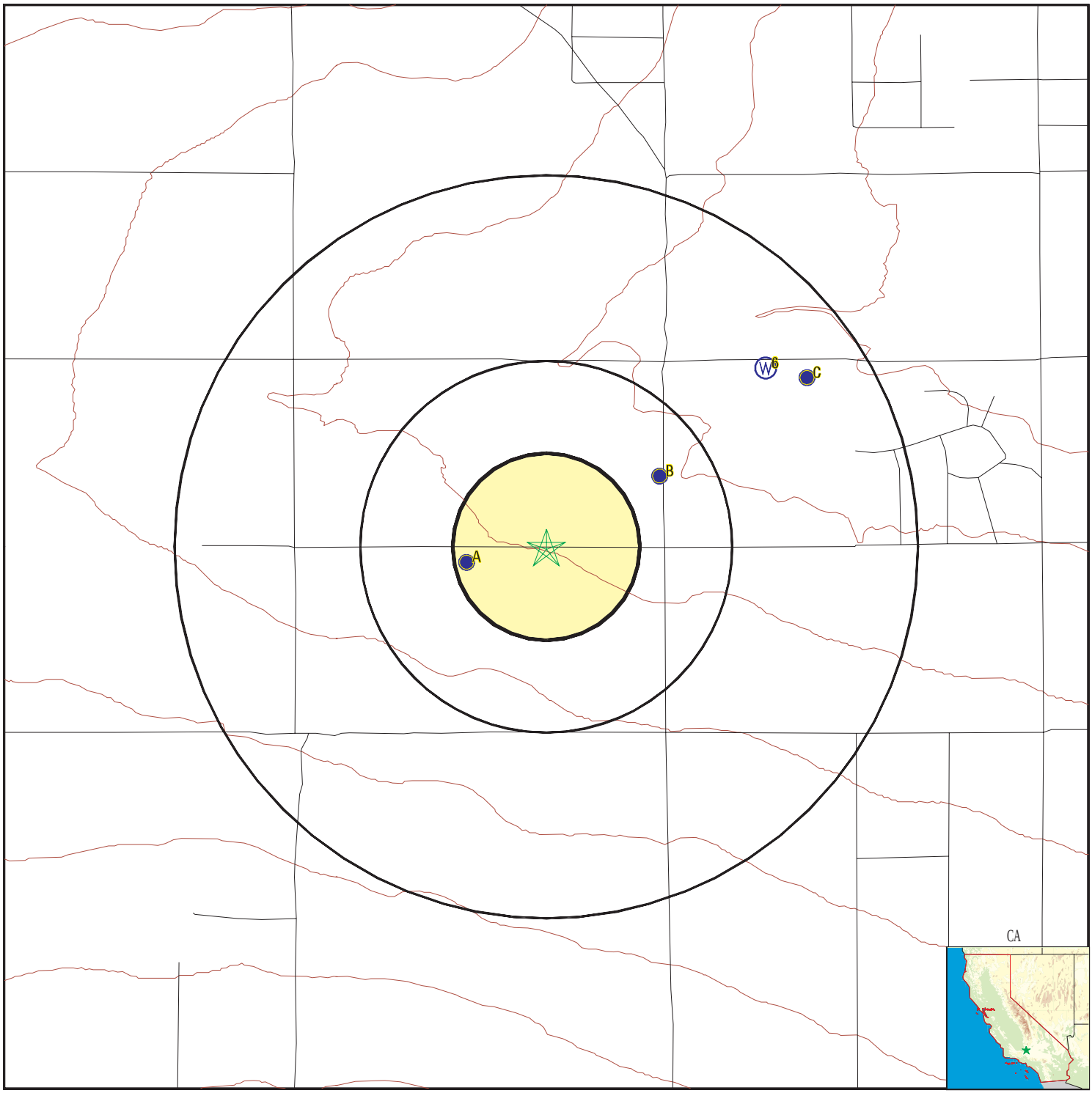
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	CADW40000015487	1/8 - 1/4 Mile West
B4	CADW40000015521	1/4 - 1/2 Mile ENE
6	CADW40000015570	1/2 - 1 Mile NE
C7	CADW40000015559	1/2 - 1 Mile NE

PHYSICAL SETTING SOURCE MAP - 2783581.2s



County Boundary
Major Roads
Contour Lines
Earthquake Fault Lines
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

0 1/4 1/2 1 Miles

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location
HD Closest Hydrogeological Data
Oil, gas or related wells

N

SITE NAME: 20301 West Avenue B 8	CLIENT: Avalon Env. Consultants
ADDRESS: 20301 West Avenue B 8 Lancaster CA 93536	CONTACT: Moe Navid INQUIRY #: 2783581.2s
LAT/LONG: 34.7964 / 118.4901	DATE: June 09, 2010 8:54 pm

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Map ID Direction Distance Elevation	Database	EDR ID Number
A1 **WSW** **1/8 - 1/4 Mile** **Higher**	**FED USGS**	**USGS3157915**

Agency cd:	USGS	Site no:	344745118293301
Site name:	008N015W08L001S		
Latitude:	344745	EDR Site id:	USGS3157915
Longitude:	1182933	Dec lat:	34.79581301
Dec lon:	-118.49341713	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	NENESWS08T008NR015WS'
Location map:	FAIRMONT BUTTE	Map scale:	24000
Altitude:	2720.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1981-08-19	Ground water data end date:	2001-03-13
Ground water data count:	19		

Ground-water levels, Number of Measurements: 19

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2001-03-13	139.37		2000-03-22	140.54	
1999-03-16	139.70				
1998-03-18	139.08				
Note: Foreign substance was present on the surface of the water.					
1997-03-12	139.19		1996-04-16	140.52	
1995-04-17	142.26		1994-04-11	146.50	
1992-04-14	147.72		1990-03-14	148.11	
1989-03-21	149.70		1988-03-30	155.82	
1987-02-24	150.12		1986-02-26	151.60	
1985-03-28	158.42		1984-03-06	156.92	
1983-04-14	160.50		1982-02-09	155.83	
1981-08-19	165.07				

Map ID Direction Distance Elevation	Database	EDR ID Number
A2 **West** **1/8 - 1/4 Mile** **Higher**	**CA WELLS**	**CADW40000015487**

Longitude:	-118.4934
Latiude:	34.7958
Stwellno:	08N15W08L001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015487

B3 **NE** **1/4 - 1/2 Mile** **Lower**	**FED USGS**	**USGS3157932**

Agency cd:	USGS	Site no:	344757118290701
Site name:	008N015W08H001S		
Latitude:	344757.0	EDR Site id:	USGS3157932
Longitude:	1182907.1	Dec lat:	34.79916667
Dec lon:	-118.48530556	Coor meth:	G
Coor accr:	5	Latlong datum:	NAD83
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Fairmont Butte	Map scale:	24000
Altitude:	2700		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Not Reported		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	20010509	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	2001-05-09	Ground water data end date:	2004-03-30
Ground water data count:	4		

Ground-water levels, Number of Measurements: 4

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2004-03-30	45.10		2003-03-25	131.79	
2002-03-28	129.52		2001-05-09	129.18	

B4
ENE
1/4 - 1/2 Mile
Lower

CA WELLS **CADW40000015521**

Longitude:	-118.484
Latiude:	34.7992
Stwellno:	08N15W09E001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015521

B5
ENE
1/4 - 1/2 Mile
Lower

FED USGS **USGS3157931**

Agency cd:	USGS	Site no:	344757118285901
Site name:	008N015W09E001S		
Latitude:	344757	EDR Site id:	USGS3157931
Longitude:	1182859	Dec lat:	34.79914623
Dec lon:	-118.4839724	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	FAIRMONT BUTTE	Map scale:	24000
Altitude:	2698.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19670913
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	1031
Source of depth data:	Not Reported		
Project number:	479281160		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1974-02-13	Ground water data end date:	1982-05-17
Ground water data count:	7		

Ground-water levels, Number of Measurements: 7

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1982-05-17					
Note: The measurement was discontinued.					
1979-02-21	146.19		1978-03-28	146.46	
1977-03-10	149.35		1976-02-11	143.20	
1975-02-20	139.35		1974-02-13	145.93	

6
NE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000015570**

Longitude:	-118.4788
Latiude:	34.8034
Stwellno:	08N15W09D001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015570

C7
NE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000015559**

Longitude:	-118.4773
Latiude:	34.803
Stwellno:	08N15W09C001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015559

C8
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3157954**

Agency cd:	USGS	Site no:	344811118283501
Site name:	008N015W09C001S		
Latitude:	344811	EDR Site id:	USGS3157954
Longitude:	1182835	Dec lat:	34.80303496
Dec lon:	-118.47730556	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	FAIRMONT BUTTE	Map scale:	24000

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Altitude:	2690.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19660310
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	1279	Hole depth:	1279
Source of depth data:	Not Reported		
Project number:	479281160		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1966-03-10	Ground water data end date:	1967-11-14
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1967-11-14	180.37		1966-03-10	295	

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zip	Total Sites	> 4 Pci/L	Pct. > 4 Pci/L
93536	11	1	9.09

Federal EPA Radon Zone for LOS ANGELES County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93536

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.600 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2009 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW[R] Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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APPENDIX V

AERIAL PHOTOGRAPHS AND HISTORICAL TOPOGRAPHIC MAPS

20301 West Avenue B 8

20301 West Avenue B 8

Lancaster, CA 93536

Inquiry Number: 2783581.4

June 04, 2010

The EDR Aerial Photo Decade Package

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

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with any questions or comments.

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Date EDR Searched Historical Sources:

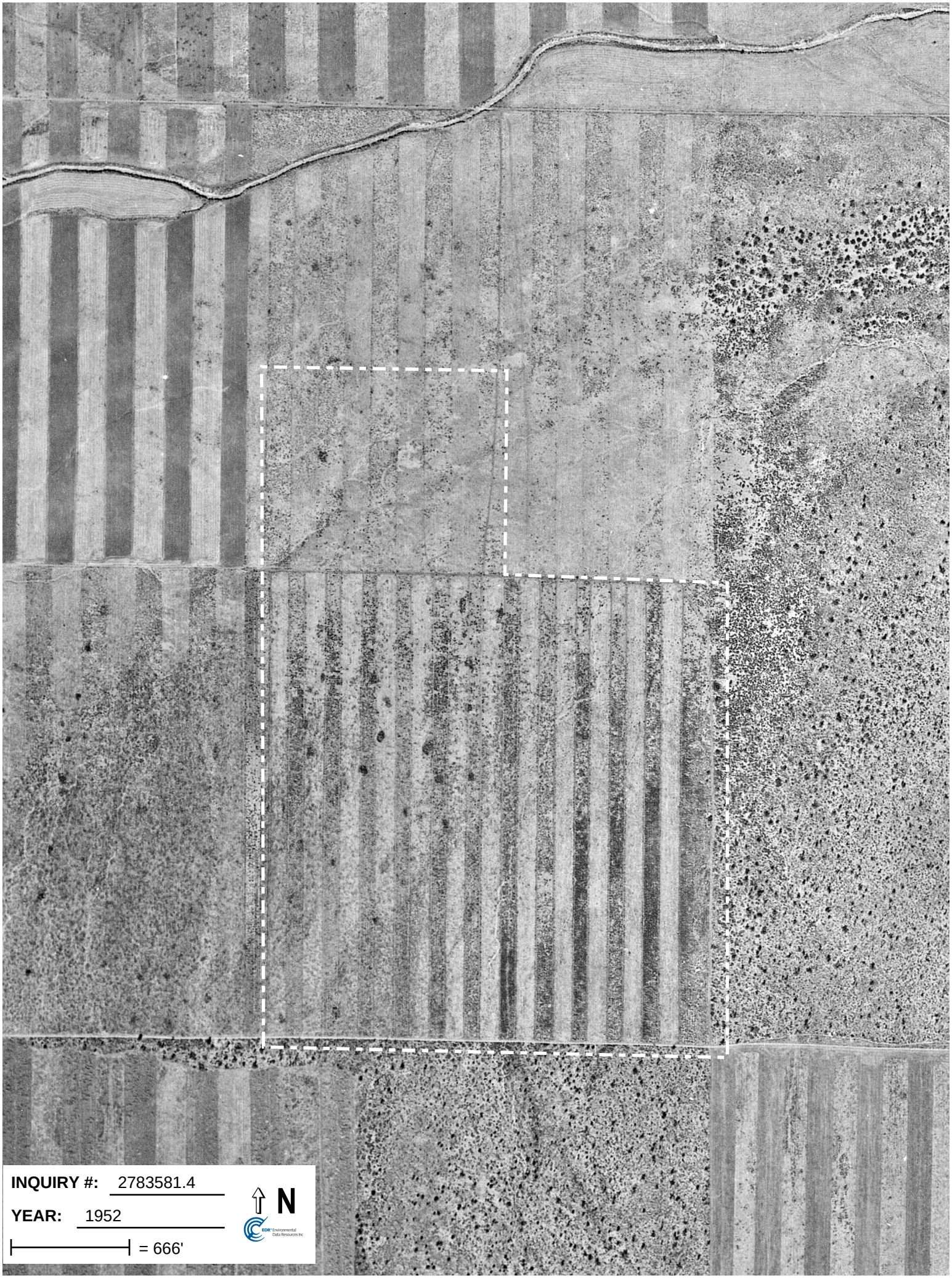
Aerial Photography June 04, 2010

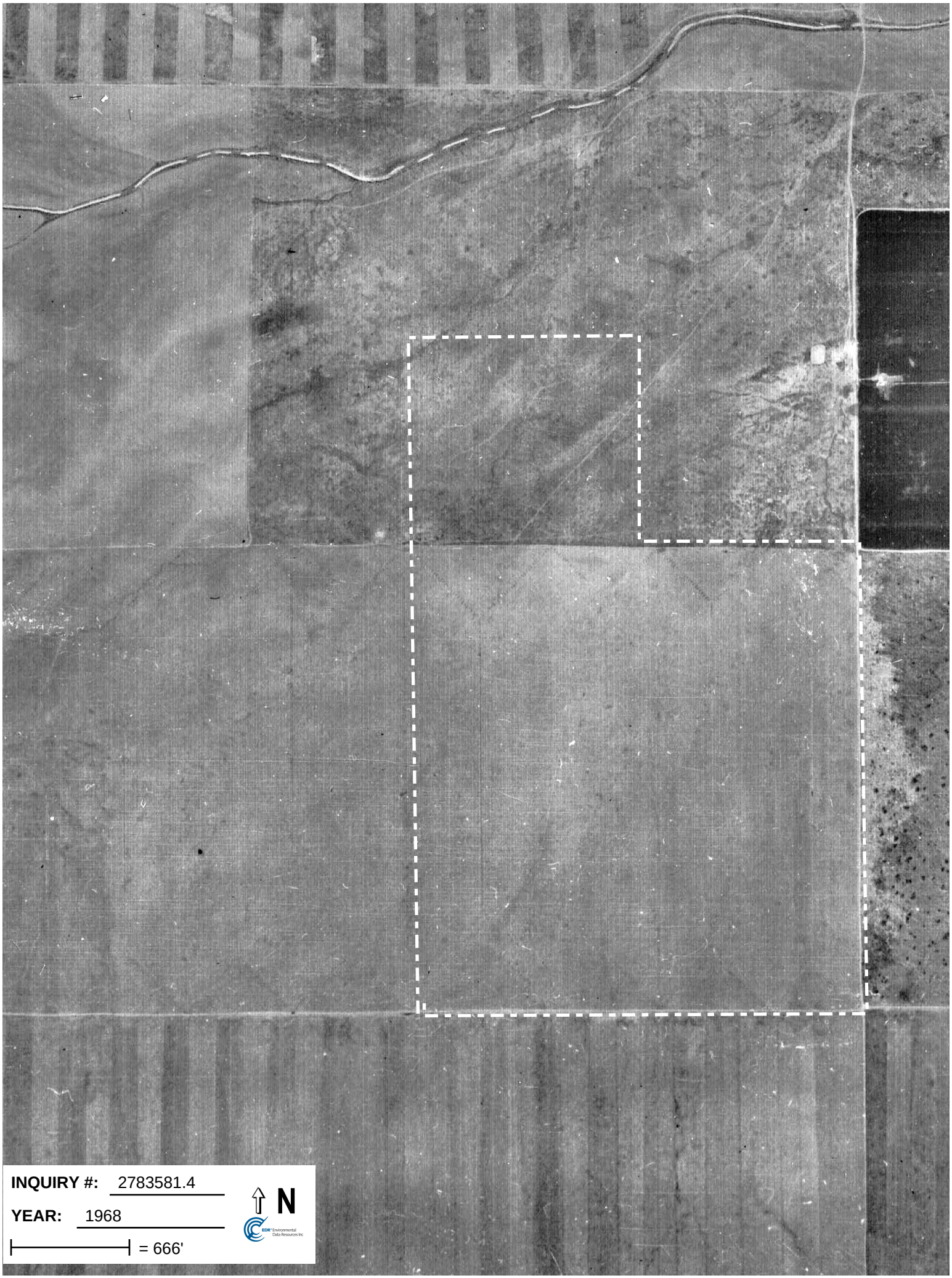
Target Property:

20301 West Avenue B 8

Lancaster, CA 93536

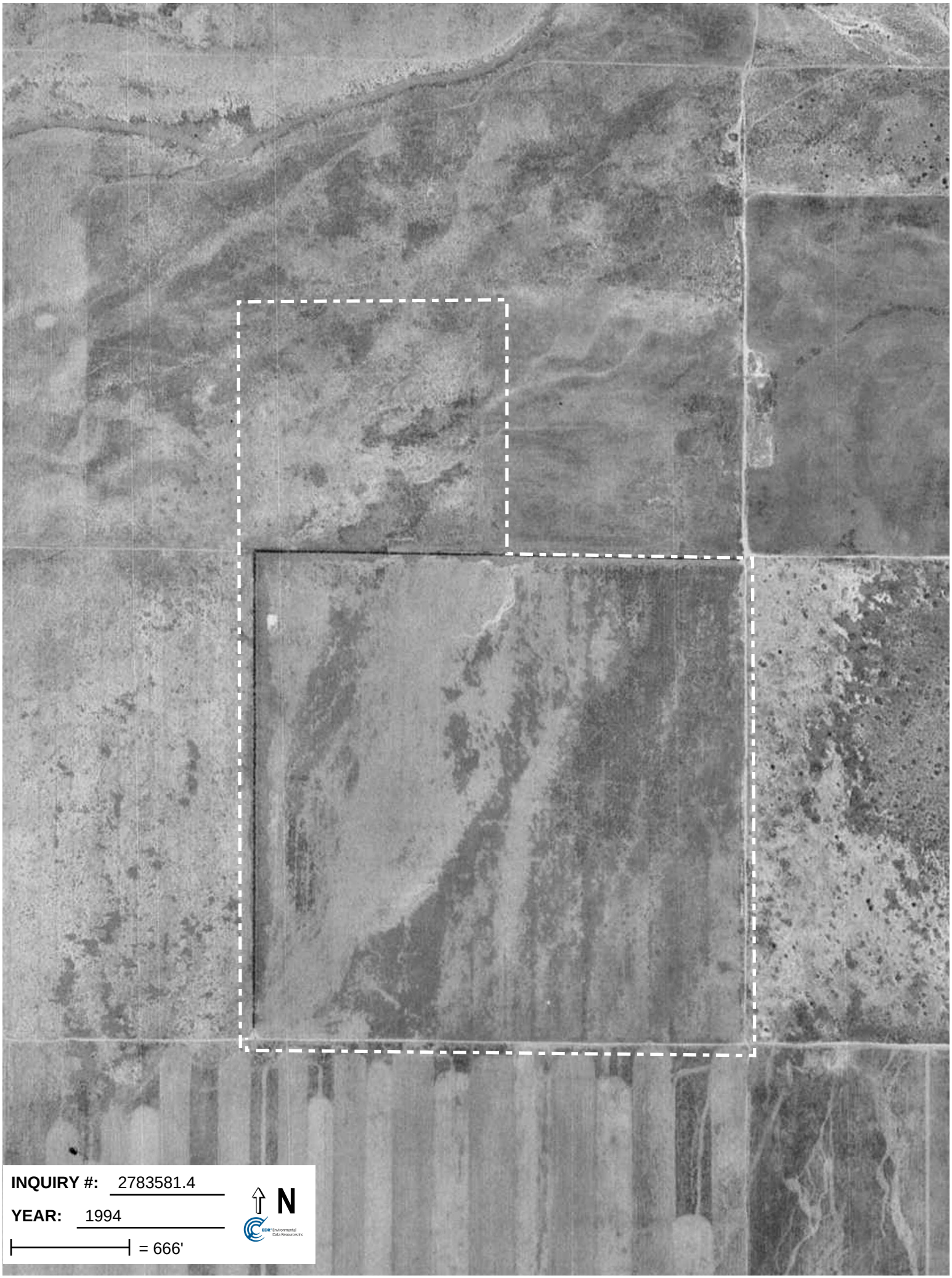
Year	***Scale***	***Details***	***Source***
1952	Aerial Photograph. Scale: 1"=666'	Flight Year: 1952	Pacific Air
1968	Aerial Photograph. Scale: 1"=666'	Flight Year: 1968	Teledyne
1975	Aerial Photograph. Scale: 1"=666'	Flight Year: 1975	NASA
1989	Aerial Photograph. Scale: 1"=666'	Flight Year: 1989	USGS
1994	Aerial Photograph. Scale: 1"=666'	Flight Year: 1994	USGS
2002	Aerial Photograph. Scale: 1"=666'	Flight Year: 2002	USGS
2005	Aerial Photograph. Scale: 1"=604'	Flight Year: 2005	EDR


INQUIRY #: 2783581.4
YEAR: 1952
= 666'
N


INQUIRY #: 2783581.4
YEAR: 1968
= 666'
N

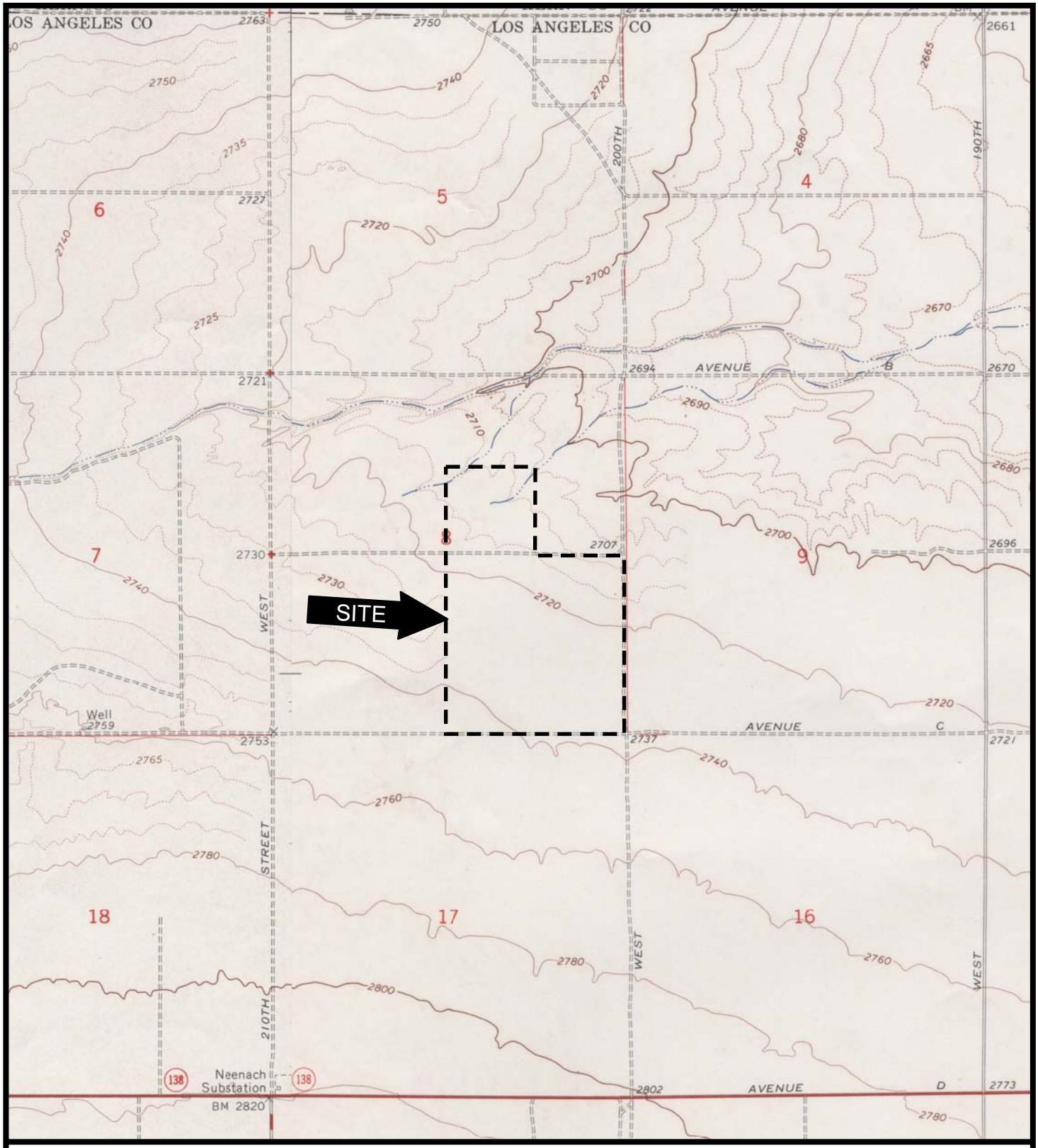
INQUIRY #: 2783581.4
YEAR: 1975
= 666'
N

INQUIRY #: 2783581.4
YEAR: 1989
= 666'
N


INQUIRY #: 2783581.4
YEAR: 1994
= 666'
N

INQUIRY #: 2783581.4
YEAR: 2002
= 666'
N

INQUIRY #: 2783581.4
YEAR: 2005
= 604'
N

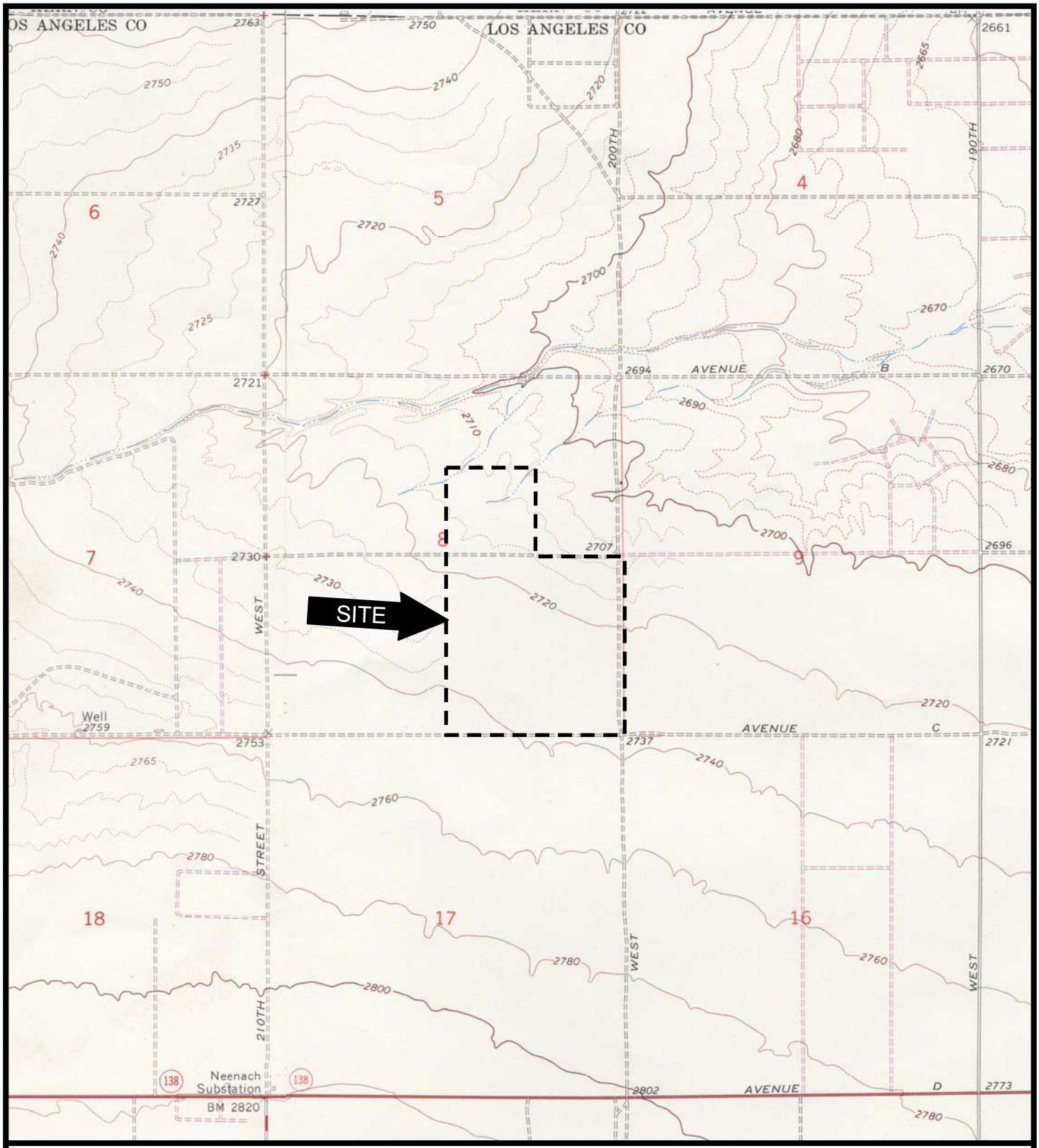


1965 Topography Map

AVALON ENVIRONMENTAL CONSULTANTS
TUSTIN, CALIFORNIA

Source:
U.S.G.S., 7.5 Minute Series Topographic Maps: Fairmont Butte Quadrangle, California

N

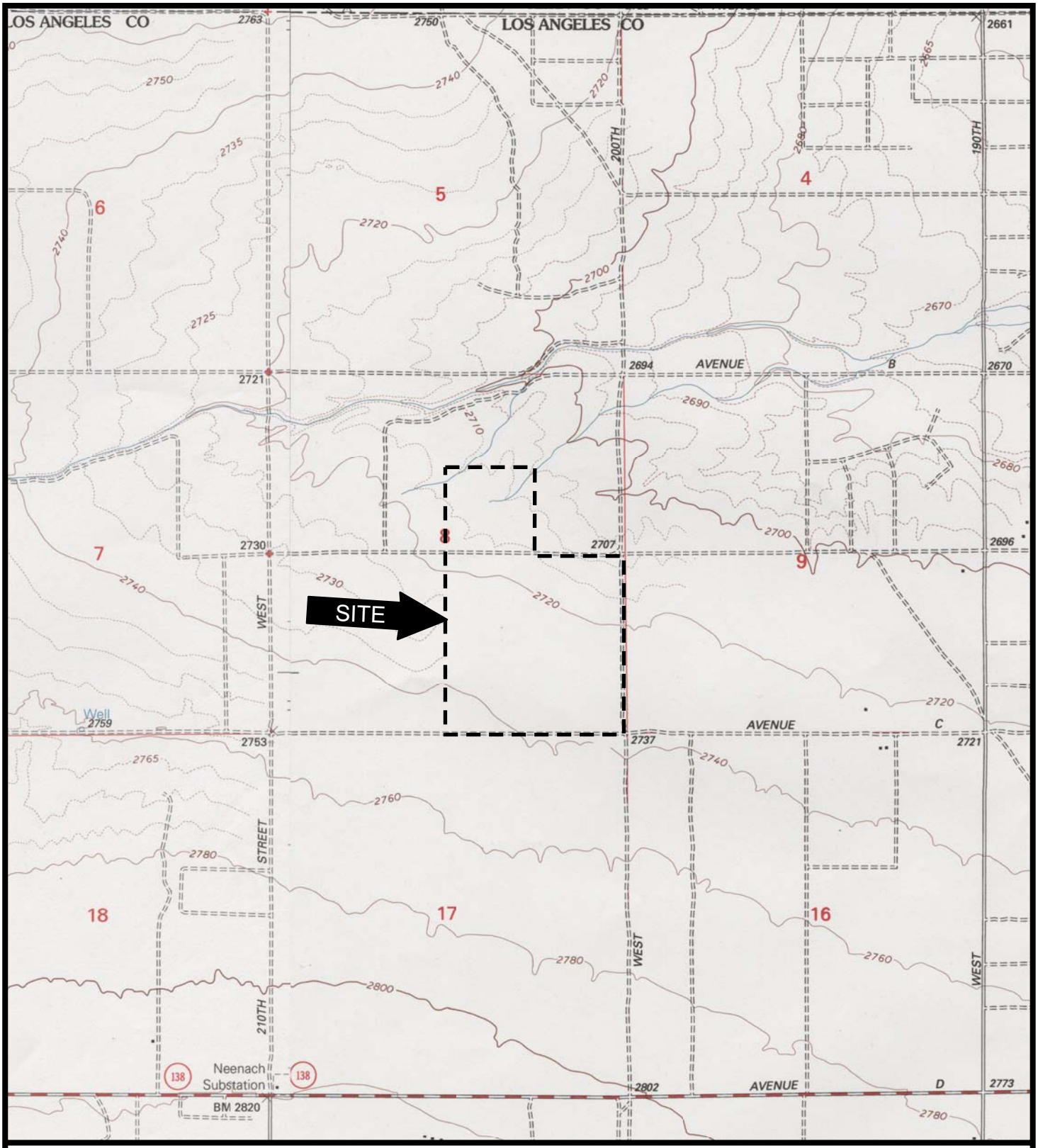


1974 TOPOGRAPHY MAP

AVALON ENVIRONMENTAL CONSULTANTS
TUSTIN, CALIFORNIA

Source:
U.S.G.S., 7.5 Minute Series Topographic Maps: Fairmont Butte Quadrangle, California

N



1995 Topography Map

AVALON ENVIRONMENTAL CONSULTANTS
TUSTIN, CALIFORNIA

Source:
U.S.G.S., 7.5 Minute Series Topographic Maps: Fairmont Butte Quadrangle, California

N

APPENDIX VI

BUILDING PERMIT RECORDS

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUILDING AND SAFETY / LAND DEVELOPMENT

ANTELOPE VALLEY
335 AVE. K-6
LANCASTER CA 93535
PHONE: (661) 723-4440 EXT:

0800

BUILDING PERMIT
NEW RESIDENTIAL
BL 0800 0203260013
DUPLICATE

LEGAL ID:
ON FILE

ASSESSOR INFORMATION NUMBER:
3256-006-012

TENANT:

OWNER: TEL. NO:
CASPER, SCOTT A (661) 942-2598-
48303 20TH W. SP15
LANCASTER, CA. 93534

APPLICANT: TEL. NO:
SAME AS OWNER -

CONTRACTOR: TEL. NO:
SAME AS OWNER -
LIC. NO

ARCHITECT OR ENGINEER: TEL. NO:
-
LIC. NO:

MAP NO:	SEWER MAP BOOK:	PAGE:	FIRE ZONE:	CMP:
73-N	N	N	3	01

NO. OF FAMILIES:	DWELLING UNITS:	APT/COND:	STAT CLASS:
		NO	33

AIR QUALITY:	SCHOOL WITHIN 1000 FEET	HAZARDOUS MATERIALS
NO	NO	NO

	SQ. FT	NO. OF STORIES	CONST TYPE	NEW OCCUP GROUP
STRUCTURE:	2356		VN	R3
GARAGE:				
OTHER:				

USE ZONE: A-1

BLDGS. NOW ON LOT: VALUATION: 47,120

FEES PAID

FEE DESCRIPTION:	QUANTITY:	UOM:	AMOUNT:
D1 PLANCHECK W/O EN-HC	47120.00	VAL	484.92
FK HOUSE NUMBERING			40.00
AA BLDG PERMIT ISSUANCE			20.60
AC STRONG MOTION RESID	47120.00	VAL	4.71
D2 PERMIT W/O EN-HC	47120.00	VAL	570.50
08 CERTIF OF OCCUPANCY			75.10
83 MOBILE HOME ENTER$	80.00	DOL	80.00
	TOTAL FEES		1,275.83

REPORT ID: DPR261 ROUTE TO: BS0800

BUILDING ADDRESS:
20301 W. AVENUE B-8
LANC CA 93536
NEAREST CROSS STREET: 205TH ST. WEST
THOMAS PAGE: GRID: LOCALITY: LANCASTER

ISSUED ON: PROCESSED BY:
06/13/02 LC

FINAL DATE FINAL BY: CODE:
08/13/02 RDH

DESCRIPTION OF WORK
NEW MANUFACTURED HOME

SPECIAL CONDITIONS:
PG. 22, GSA, SOILS REQ'D., 20 LBS. SNOWLOAD

APPROVALS	DATE	INSPECTOR SIGNATURE
LOCATION AND SETBACKS		
SOILS ENGINEER APPROVAL		
FOUNDATION/TRENCH FORMS		
SLAB/UNDER FLOOR		
RAISED FLOOR FRAMING		
UNDERFLOOR INSULATION		
1ST LEVEL FLOOR SHEATH		
2ND LEVEL FLOOR SHEATH		
ROOF SHEATHING		
FIRE DEPT. FRAME INSPECT		
BLDG DEPT. FRAME INSPECT		
SHEAR PANELS		
INSULATION/WEATHER STRIP		
INTERIOR LATH/DRYWALL		
EXTERIOR LATH		
LOT DRAINAGE		
SMOKE DETECTION DEVICES		
FIRE DEPARTMENT APPROVAL		

COUNTY OF LOS ANGELES • OFFICE OF ASSESSOR

MOBILE HOME APPRAISAL RECORD (RP)

CROSS-REFERENCE IMPROVEMENTS ▶	AREA	TRA	MAP BOOK	PAGE	PARCEL

LAND INDEX ▶	REG	CLUSTER	MAP BOOK	PAGE	PARCEL	SUB-PART
	A1	01025	3256	6	12	1 of 1

ASSESSEE'S NAME AND MAILING ADDRESS

LEGAL OWNER/LIEN HOLDER'S NAME AND MAILING ADDRESS

SITUS ADDRESS: 20301 W. Ave B-8

MODEL: Lakepointe SLE
MANUF: Fleetwood

☐ 1-WIDE ☒ 2-WIDE ☐ 3-WIDE ☐ TAG ☐ EXPANDO ☐ OTHER:

QUAL CLASS: D7 YR BLT: 2002

EXTERIOR		ROOF STYLE		SKIRTING	
Alum. Panels		Arched		Alumn. Panels	
Masonite Panels		Flat		Masonite Panels	
Alum. Shiplap Siding		Gable	X	Alum. Shiplap	
Decorative Stone		Cut-Up		Fiberglass	
Other Hardboard	X	Pitch: L (M) H		Brick or Stone	
Exp. Fasteners		O'hang: F R S		Other:	X

WINDOWS		ROOF COVER		HEATING	
Minimum		Gal. Steel		Forced Air	X
Typical		Enameled Steel		☐ Downflow	
Special: Bay		Asphalt Shingle		☐ Upflow	
Picture		Composition Roll	X	Wall or Floor	
		Gravel/Rock		Other:	
Sliding Glass Doors (No.)		Other:		Set-Up for A/C	

INSULATION		FOUNDATION		COOLING	
Floor	R-	Piers		Refrig. (Tons)	X
Walls	R-	Permanent	X	Heat Pump (Tons)	
Ceiling	R-			Thru-Wall	
		Tie Downs (No.)		Evap. Cooler	

ROOMS	NO.	FL'R MAT'L	NO. OF PLB FIXT.	DESCRIPTION
Entry				
Living Rm	1			
Dining Rm				
Family Rm	1			
Den				
Kitchen	1			
Utility	1			
Bedroom	4			
Dress. Rm				
Full Bath	3			
¾ Bath				
½ Bath				
TOTALS				

KITCHEN FEATURES

Cabinets-Wood Type:					L.F.
Counters-Mat'l Type:					L.F.
Garb. Disp.		Dishwasher	X	Hood-Fan	
Range-Oven		Compactor		Microwave	

SPECIAL INTERIOR FEATURES

Bar-Wet, Dry		Hutch		Book Case	
Fireplace		Cath. Ceiling		Extra Bath	
Hydromassage					

SPECIAL EXTERIOR FEATURES

Window Awnings		Shutters		Shake Roof	
Unitizing		Upgr. Windows			

MOBILE HOME RATING (E-G-A-F-P)

Quality	Condition	Appearance	Conform.	Location

PARK RATING (E-G-A-F-P)

Overall Location	General Appearance	Recreational Facilities	Overall Quality

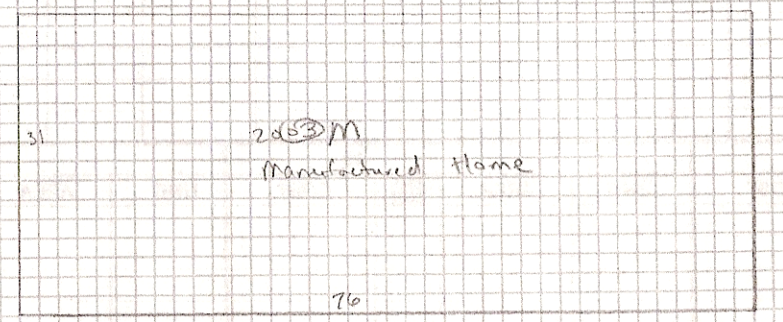
YEAR	DESIGN TYPE	QUALITY CLASS	EFF. YEAR	DEPR. TABLE	SQ. FEET MAIN IMP.	R.C.N. MAIN IMP.	R.C.N. TOTAL	% GOOD	R.C.L.N.D.	ADD'L TYPE	DEPR. % GOOD	R.C.L.D.	.OX %	OX R.C.L.D.	APPRAISER	DATE	REVIEWED	DATE	CO. CK.

ASSESSMENT YEARS ▶			20003 M	19				19				19			
UNIT	AREA	UNIT COST	COST	UNIT	AREA	UNIT COST	COST	UNIT	AREA	UNIT COST	COST	UNIT	AREA	UNIT COST	COST
Mobil Home	2356	31.03	73110												
Air Conditioning	2356	2.00	4710												
Evap. Cooler															
Dishwasher			610												
Bar															
Other (see over) Foundation			13000												
TOTAL R.C.N. MAIN			91430												
Carport/Porch Roof															
Porch															
Skirting	214	7.80	1670												
Storage Building															
SUB-TOTAL R.C.N.			1670												
Deduct for Single-wides															
R.C.N. TOTAL			93100												

A.V. Disc x 90% 83500(Rd)

76M862 RP-367 (rev. 11/82)

SCALE: 1" = 20'



SPECIAL FEATURES (other)	
ITEM	COST
TOTAL	

MISC. STRUCTURES

STRUCTURE	FOUNDATION	FLOOR	EXTERIOR	ROOF	INTERIOR

AREA COMPUTATIONS

MAIN (DESCR. AND DIMEN.)	AREA	OTHER (DESCR. AND DIMEN.)	AREA
31 x 76	2356		

DATE	APPRAISER	MISCELLANEOUS INFORMATION
20021004	P. Lund	2003M Manufactured Home complete EDC 020813 per BS

"Q" SERIES NUMBER(S)	VEHICLE I.D. NUMBER(S)	LICENSE NUMBER(S)

MARKET DATA

DATE	APPRAISER	REMARKS

PERMIT DATA

OWNER'S NAME

PERMIT NO.	DATE	AMOUNT	IMPROVEMENT
LCBL 00013	020613	47120	Manufactured Home

APPENDIX VII

PHOTOGRAPHS

THE SUBJECT PROPERTY LOOKING WEST FROM 200TH STREET

THE SUBJECT PROPERTY LOOKING NORTH FROM THE SOUTHERN BOUNDARY

MOBILE-HOME LOCATED ON THE SUBJECT PROPERTY

PUMP HOUSE ON THE SUBJECT PROPERTY

OIL FILTER, 5-GALLON BUCKET OF OIL AND OTHER AUTOMOTIVE DEBRIS ON THE SUBJECT PROPERTY

TRUCK TIRES ON THE SUBJECT PROPERTY

OIL-STAINED CONCRETE PAD

UNIDENTIFIABLE PIPE

ADJACENT PROPERTY LOCATED TO THE NORTH

ADJACENT PROPERTY LOCATED TO THE SOUTH

ADJACENT PROPERTY LOCATED TO THE EAST

ADJACENT PROPERTY LOCATED TO THE WEST

AVALON ENVIRONMENTAL CONSULTANTS

PHASE II
LIMITED SUBSURFACE SITE ASSESSMENT

PERFORMED AT

APNS 3256-006-012 AND 013

NEAR INTERSECTION OF WEST AVENUE B-8 AND

200TH STREET WEST

LOS ANGELES COUNTY, CALIFORNIA

PROJECT NUMBER: 0920-233-2

PREPARED FOR

NRG SOLAR

CARLSBAD, CALIFORNIA

AUGUST 12, 2010

AVALON ENVIRONMENTAL CONSULTANTS
131 NORTH TUSTIN AVENUE, SUITE 213
TUSTIN, CALIFORNIA 92780
714 836 6632
714 836 6643 FAX

PHASE II
LIMITED SUBSURFACE SITE ASSESSMENT
PERFORMED AT
APNS 3256-006-012 AND 013
NEAR INTERSECTION OF WEST AVENUE B-8 AND
200TH STREET WEST
LOS ANGELES COUNTY, CALIFORNIA
PROJECT NUMBER: 0920-233-2

PREPARED FOR
NRG SOLAR
CARLSBAD, CALIFORNIA
AUGUST 12, 2010

PREPARED BY: _____
Trevor D Santochi,
Certified Engineering Geologist 1591

REVIEWED BY: _____
Mohammad L. Navid,
Project Principal

TABLE OF CONTENTS

SECTION **PAGE**

1.0 EXECUTIVE SUMMARY 1

2.0 INTRODUCTION 2
2.1 Purpose 2

3.0 GENERAL SITE INFORMATION 2
3.1 Site Location 2
3.2 Geology/Hydrology 3

4.0 SUMMARY OF PHASE II FIELD OPERATIONS 4
4.1 Utility Clearance 4
4.2 Soil Boring and Sampling Procedures 4

5.0 PHASE II FIELD INVESTIGATION RESULTS 5
5.1 Laboratory Analytical Results 5

7.0 CONCLUSIONS 7

8.0 RECOMMENDATIONS 7

9.0 ASSESSMENT LIMITATIONS 7

10.0 CONFLICT CERTIFICATION 8

APPENDICES 9

Appendix I . . . . . Maps
Appendix II . . . . . Scope of Work
Appendix III . . . . . Health and Safety Plan
Appendix IV . . . . . Laboratory Analytical Results
Appendix V . . . . . Boring Logs

1.0 EXECUTIVE SUMMARY

Avalon Environmental Consultants, Inc. (Avalon), conducted a Limited Phase II Subsurface Site Assessment (SSA) at the request of NRG Solar. The assessment was performed near the corner of West Avenue B-8 and 200th Street West, near the City of Lancaster, in the County of Los Angeles, California (Subject Property) on July 27, 2010.

The subject property consists of a two parcels with a total area of approximately 200 acres. The subject property is located on the west side of 200th Street West and on the north and south sides of West Avenue B-8, in an unincorporated area of the County of Los Angeles. Most of the subject property consists of former farmland interspersed with natural vegetation. The western portion of the subject property, north of Avenue B-8, has been developed with a farmstead consisting of a pre-manufactured single-family residence and a stable. Additionally, two concrete slabs are located south of the above residence. One of the pads appears to have contained a former residential or commercial structure, the other concrete slab appears to have been a foundation for an above ground fuel tank, or diesel motor for a generator or pump, as the concrete pad and soil surrounding the pad appeared to be heavily stained with a petroleum product.

Based upon the above, Avalon identified two areas of concern and recommended subsurface sampling in these areas.

One boring was placed near the concrete slab which formerly contained a structure of unknown use. The slab contained what appeared to be a four-inch pipe which was protruding from the slab. It is likely that this line lead to a septic system, however, it could also have been the fill port for a waste oil underground storage tank (UST). The boring was placed near this protruding pipe and was advanced to a depth of fifteen feet below ground surface (bgs). Soil samples were collected every five feet.

Two borings were placed near the concrete slab which appears to have been the foundation for a diesel motor or above ground fuel tank which may also contain a capped agricultural water well. The use of this slab could not be determined, however, the concrete slab and the soils surrounding the slab were heavily stained with petroleum product. The two borings were drilled to a depth of twenty feet bgs and samples were collected every five feet.

All samples were analyzed for Total Petroleum Hydrocarbons (carbon-chain analysis) by EPA Modified Method 8015. One sample was analyzed for benzene, toluene, ethylbenzene and xylene (BTEX) using EPA method 8260B.

No detections of petroleum hydrocarbons were encountered in the boring placed near the concrete slab which formerly contained a residential or commercial structure. Hydrocarbons were detected in the two borings placed near the petroleum stained slab to a depth of ten feet bgs. Soils samples from these borings collected at a depth of fifteen and twenty feet bgs were no non-detect for petroleum hydrocarbons.

Based on the above, it appears that the hydrocarbon release was derived from surface spillage and not from the subsurface and that the impact is limited in extent. Additionally based on non-detect levels in the deeper borings and the local depth to groundwater it is unlikely that groundwater has been impacted by this release.

Depending on the proposed use of the subject property, further assessment would be required to determine the extent of impact if remediation is desired by the client.

2.0 INTRODUCTION

This report presents the results of the Limited Phase II SSA conducted by Avalon near the corner of West Avenue B-8 and 200th Street West, near the City of Lancaster in the County of Los Angeles, California, on July 27, 2010 (Figure 1, Topography and Site Location Map, Appendix I).

All field activities were performed in accordance with the "Scope of Work," prepared by Avalon, and submitted to NRG Solar (See Appendix II, Scope of Work.) with the exception that two of the borings were advanced to a depth of 20 feet bgs as opposed to fifteen feet bgs in an effort to define the vertical limit of impact due to staining observed in both samples at a depth of ten feet bgs.

This report briefly reviews the field methodology and presents the analytical laboratory results of the soil samples collected. Health and safety guidelines were observed in conducting all field activities in accordance with the Site-Specific Health and Safety Plan (Appendix III).

2.1 Purpose

The purpose of this investigation is to determine if the subsurface soil at the subject property has been impacted by its former use.

3.0 GENERAL SITE INFORMATION

3.1 Site Location

The subject property consists of a two parcels with a total area of approximately 200 acres. The subject property is located on the west side of 200th Street West and on the north and south sides of West Avenue B-8, in an unincorporated area of the County of Los Angeles. Two concrete slabs were identified by Avalon in their Phase I ESA dated July 19, 2010. One of the slabs appears to be for either a residence or a commercial structure. A small pipe was protruding from the slab and appeared to be either a drain to a septic system or the fill port to a waste oil UST. Based upon further visual assessment of this area it is likely that the pipe leads to a septic system.

Because Avalon could not be sure, one boring was placed near this protruding pipe and no contamination was found.

The other slab appears to have contained either an above ground fuel tank, a fuel powered engine, powering either a generator, or a pump or a filtration system. As the equipment is no longer located on the slab, a definitive answer could not be obtained. The slab and surrounding soils are heavily stained with petroleum product. Avalon initially thought that the pad may have contained an abandoned water well, however, Avalon contacted a licensed water well inspector, who informed Avalon that metal plate located on the slab was most likely a mount for equipment such as a water filtration system. Avalon identified significant hydrocarbon levels in the soils to a depth of five feet bgs and detectable amounts to a depth of ten feet bgs. Samples at fifteen and twenty feet bgs were non-detect for hydrocarbons. This indicates that the release is limited in extent and not a potential threat to groundwater.

3.2 Geology/Hydrology

Geology - The subject property lies in the Los Angeles Basin which extends south from the foothills of the San Gabriel Mountains to the sea and southeast from the Santa Monica Mountains to the Santa Ana Mountains and San Joaquin Hills. The surface of the Los Angeles Basin is largely covered by stream-laid sand, gravel and silt. The rocks of the Los Angeles Basin consist of (a) old crystalline basement rocks (igneous and metamorphic rocks of the types seen in the Peninsular and Transverse Ranges), (b) pre-basin sedimentary rocks (ranging from late Cretaceous to lower Miocene comprised of layers of conglomerate, sandstone and shale approximately 17,000 feet thick), and recent to late Tertiary alluvial sediments. The structure of the basin is replete with folds and faults.

Hydrology - Depth of groundwater data was obtained through well date from nearby wells. Depth of groundwater is approximately 140-160 feet below ground surface (bgs.) Based on the local topography of the area the groundwater gradient is most likely to flow to the southeast.

A topography and site location map is provided in Appendix I.

4.0 SUMMARY OF PHASE II FIELD OPERATIONS

4.1 Utility Clearance

As required by law, Underground Service Alert was contacted in order to provide clearance of the boring locations from any possible underground utility lines which might exist in the vicinity of the proposed borings.

4.2 Soil Boring and Sampling Procedures

Prior to the start of the drilling operations, a tailgate Health and Safety meeting was conducted by the Project Manager to discuss potential health and safety risks and the appropriate precautions required to reduce such risks. All field personnel present signed the Attendance List in the Health and Safety Plan acknowledging that a Health and Safety meeting was held.

The boring locations are shown on Figure 2 (Appendix I). Soil samples were collected in stained areas of the subject property at depths of one, five, ten fifteen and twenty feet bgs. Kehoe Testing of Huntington Beach, California, performed the drilling and soil sampling under the supervision of an Avalon Geologist. Kehoe used a Geoprobe system to advance the soil borings and to obtain cores of soil samples in all of the borings.

The Geoprobe is a hydraulically-powered coring mechanism. The Geoprobe system of coring consisted of a conical piston tip and cutting shoe mounted on a 1-inch outside diameter hollow probe rod. The probe rods were lined with two feet of 0.96 inch diameter by 6-inch long brass liners (tubes) in which soil samples were collected. The probe rod assembly was literally "pushed" into the soil by the hydraulically-powered machine. When the probe tip encountered resistance to the "push" due to rocks or compacted material, penetration was achieved by driving with a percussion hammer until the desired sampling point was reached. A piston stop-pin at the trailing end of the sampler was removed by means of extension rods after the sampler was driven to the desired depth. This enabled the piston tip to retract into the sample tube as it was displaced by the soil sample being taken. The tool string was then pulled out and the sample liners extracted. The second sample tube was retained, the ends of the tube covered with Teflon material and plastic bags, labeled, double-bagged in plastic bags, placed on ice in a portable cooler and entered into a chain of custody form.

Soil samples were collected, examined, logged and prepared by a State of California Registered Geologist. Soil descriptions were in accordance with the Unified Soil Classification System (USCS) as outlined in American Society of Testing Materials (ASTM) document D2487. Logs of the soil borings are included in this report as Appendix IV. Groundwater was not encountered in any of the borings.

All coring tools and sample liners were decontaminated before and after coring each borehole to prevent cross contamination between boreholes using the following procedure:

- Solids were removed from the coring and sampling equipment with a brush and washed in an Alconox-water solution.
- Rinsing with tap water.
- Rinsing with distilled water.

All collected soil samples were delivered, with proper Chain of Custody, to Sunstar Laboratories, Inc., located in Lake Forest, California.

5.0 PHASE II FIELD INVESTIGATION RESULTS

5.1 Laboratory Analytical Results

The soil samples were analyzed for total petroleum hydrocarbons (TPH) Carbon-Chain analysis by EPA Modified Method 8015 and for BTEX Compounds by EPA Method 8260B.

Detailed laboratory results, Quality Assurance/Quality Control (QA/QC) documentation and Chain of Custody records are presented in Appendix IV.

TABLE I
ANALYTICAL SOIL SAMPLE RESULTS

SAMPLE NUMBER	TPH-CARBON CHAIN ANALYSIS EPA MODIFIED METHOD 8015	BTEX EPA METHOD 8260 B
GP-1@5'	ND ALL @ 10.0 mg/kg	Not Analyzed
GP-10@10'	ND ALL @ 10.0 mg/kg	Not Analyzed
GP-1@15"	ND ALL @ 10.0 mg/kg	Not Analyzed
GP-2@1'	Not Analyzed	Not Analyzed
GP-2@5'	(C6-C12) 2,000 mg/kg (C13-C28) 9,800 mg/kg (C29-C40) 920 mg/kg	Benzene ND@ 5.0 µg/kg Toluene ND@ 5.0 µg/kg Ethylbenzene ND@ 5.0 µg/kg Xylene ND@ 5.0 µg/kg
GP-2@10"	(C6-C12) 230 mg/kg (C13-C28) 1,300 mg/kg (C29-C40) 120 mg/kg	Not Analyzed

TABLE I ANALYTICAL SOIL SAMPLE RESULTS		
SAMPLE NUMBER	**TPH-CARBON CHAIN ANALYSIS EPA MODIFIED METHOD 8015**	**BTEX EPA METHOD 8260 B**
GP-2@15"	ND ALL @ 10.0 mg/kg	Not Analyzed
GP-2@20"	ND ALL @ 10.0 mg/kg	Not Analyzed
GP-3@5'	(C6-C12) ND @ 10 mg/kg (C13-C28) 18 mg/kg (C29-C40) 12 mg/kg	Not Analyzed
GP-3@10'	ND ALL @ 10.0 mg/kg	Not Analyzed
GP-3@15'	ND ALL @ 10.0 mg/kg	Not Analyzed
GP-3@20"	ND ALL @ 10.0 mg/kg	Not Analyzed

Note ND = Not Detected at Method Detection Limits
Not Analyzed Not analyzed for above constituent
µg/kg = Microgram Per Kilogram or Parts Per Billion (ppb)
mg/kg = Milligram Per Kilogram or Parts Per Million (ppm)

Detection Limits: DETECTION LEVEL FOR SOIL
Carbon Chain Modified Method 8015 =10.0 mg/kg
BTEX Compounds 8260 = 5.0 µg/kg

C6-C12 Gasoline Range Organics (GRO)
C13-C28 Diesel Range Organics (DRO)
C29-C40 Motor Oil Range Organics (MORO)

Soil samples collected in boring GP-1 were non-detect for TPH in all hydrocarbon ranges. Borings GP-2 and GP-3 encountered elevated levels of hydrocarbons at a depth of five feet bgs. Although gasoline, diesel and motor oil range hydrocarbons are present in sample GP-2@5', no benzene, toluene, ethylbenzene, xylene (BTEX) components were identified, which if present, would indicate the presence of gasoline. It is likely that the gasoline range hydrocarbons encountered were the light ends of diesel range hydrocarbons. The concentrations of the diesel decreases with depth indicating a limited impact derived from a surface source. Although the horizontal extent of impact has not been defined, based on visual observations it is likely that the horizontal extent of impact in less than fifteen feet from the concrete pad.

6.0 FINDINGS

The results of the Limited Phase II SSA indicate the following:

- Soils encountered in the area of the concrete pad which was used for a residential or commercial structure were all Non-Detect for hydrocarbons.

- Soils encountered near the oil stained concrete pad were impacted to a depth of ten feet bgs with diesel range hydrocarbons. The highest levels encountered were 9,800 mg/kg of diesel. No BTEX components were identified indicating that the gasoline range hydrocarbons identified were most likely the light ends of the diesel hydrocarbon chain. Non-detect levels of hydrocarbons in the fifteen and twenty foot samples indicate a limited vertical extent of impact and that any impact to groundwater is unlikely.

7.0 CONCLUSIONS

Based on the above findings, Avalon concludes:

- The subject property has been impacted in the area of the stained slab and surrounding soils, however, it appears that the impact is near surface and limited in extent both vertically and horizontally.

8.0 RECOMMENDATIONS

Based on the above conclusion, Avalon recommends:

- In the event that remediation is desired by the client, further assessment would be necessary.

- Any required remediation of impacted soils would be dependant upon the proposed property use.

- No further assessment is required at this time.

9.0 ASSESSMENT LIMITATIONS

The scope of this report is limited to the matters expressly covered. This report is prepared for the sole benefit of the NRG Solar. This report may not be relied upon by any other person or entity without the written authorization of Avalon Environmental Consultants Inc.

In preparing this report, Avalon Environmental Consultants, Inc. has relied on information derived from secondary sources and personal interviews. Except as set forth in this report, Avalon has made no independent investigation as to the accuracy and completeness of the

information derived from secondary sources of personal interviews, and has assumed that such information is accurate and complete.

It should be recognized that the definition and evaluation of geologic and hydrologic conditions, as well as the assessment of chemical fate and movement in these conditions is a difficult and inexact science. Judgments leading to conclusions are generally made with incomplete knowledge of the subsurface conditions present. More extensive studies may be performed to reduce these inherent uncertainties. No warranty, expressed or implied, is made.

All recommendations, findings, and conclusions stated in this report are based upon facts and circumstances as they existed at the time that this report was prepared (e.g./federal, state and local laws, rules, regulations, market conditions, energy costs, wage rates, political climate, and other matters that Avalon deemed relevant). A change in any fact or circumstance upon which this report is based may adversely affect the recommendations, findings and conclusions expressed in this report.

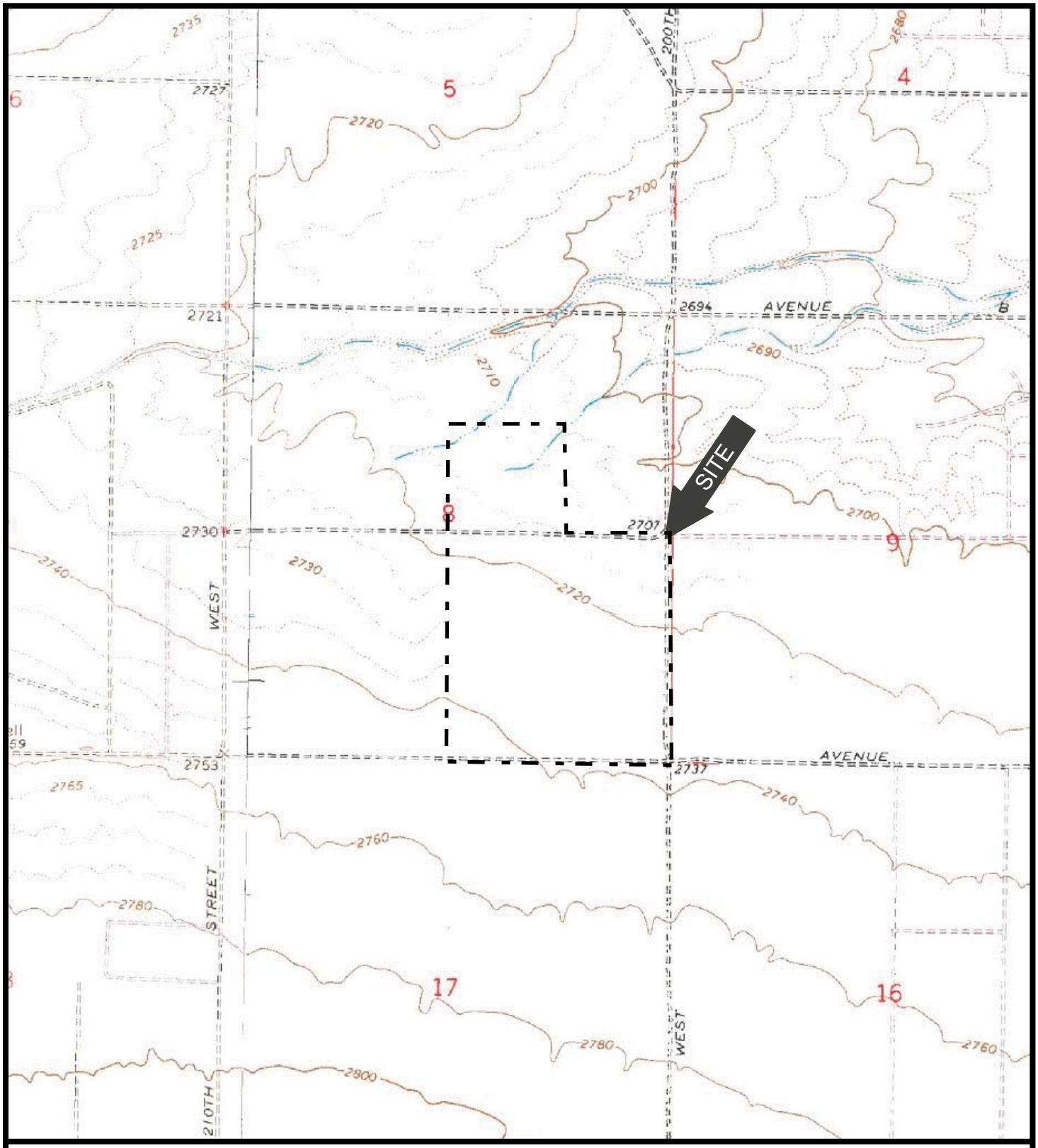
10.0 CONFLICT CERTIFICATION

Avalon Environmental Consultants has no present or contemplated future ownership interest or financial interest in the real estate that is the subject of this Phase II Environmental Site Assessment; and, Avalon Environmental Consultants has no personal interest with respect to the subject matter of the Phase II Environmental Site Assessment or the parties involved and Avalon Environmental Consultants has no relationship with the property or the owners thereof which would prevent an independent analysis of the environmental or other conditions of the property.

APPENDICES

APPENDIX I

MAPS

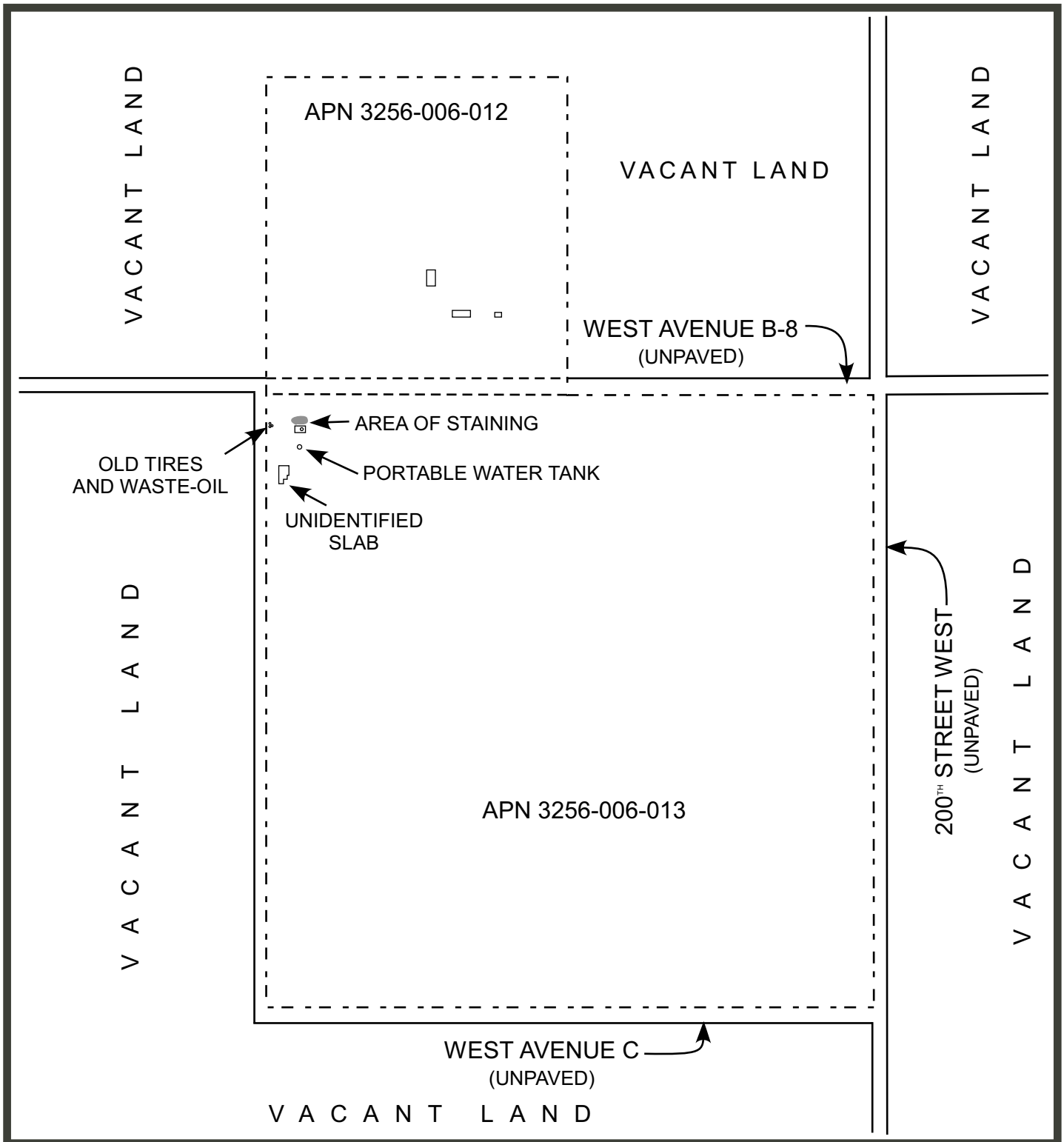


TOPOGRAPHY AND SITE LOCATION MAP

AVALON ENVIRONMENTAL CONSULTANTS
TUSTIN, CALIFORNIA

Source:
U.S.G.S., 7.5 Minute Series Topographic Maps: Fairmont Butte Quadrangle, California, 1995

N



SITE LOCATION PLAN

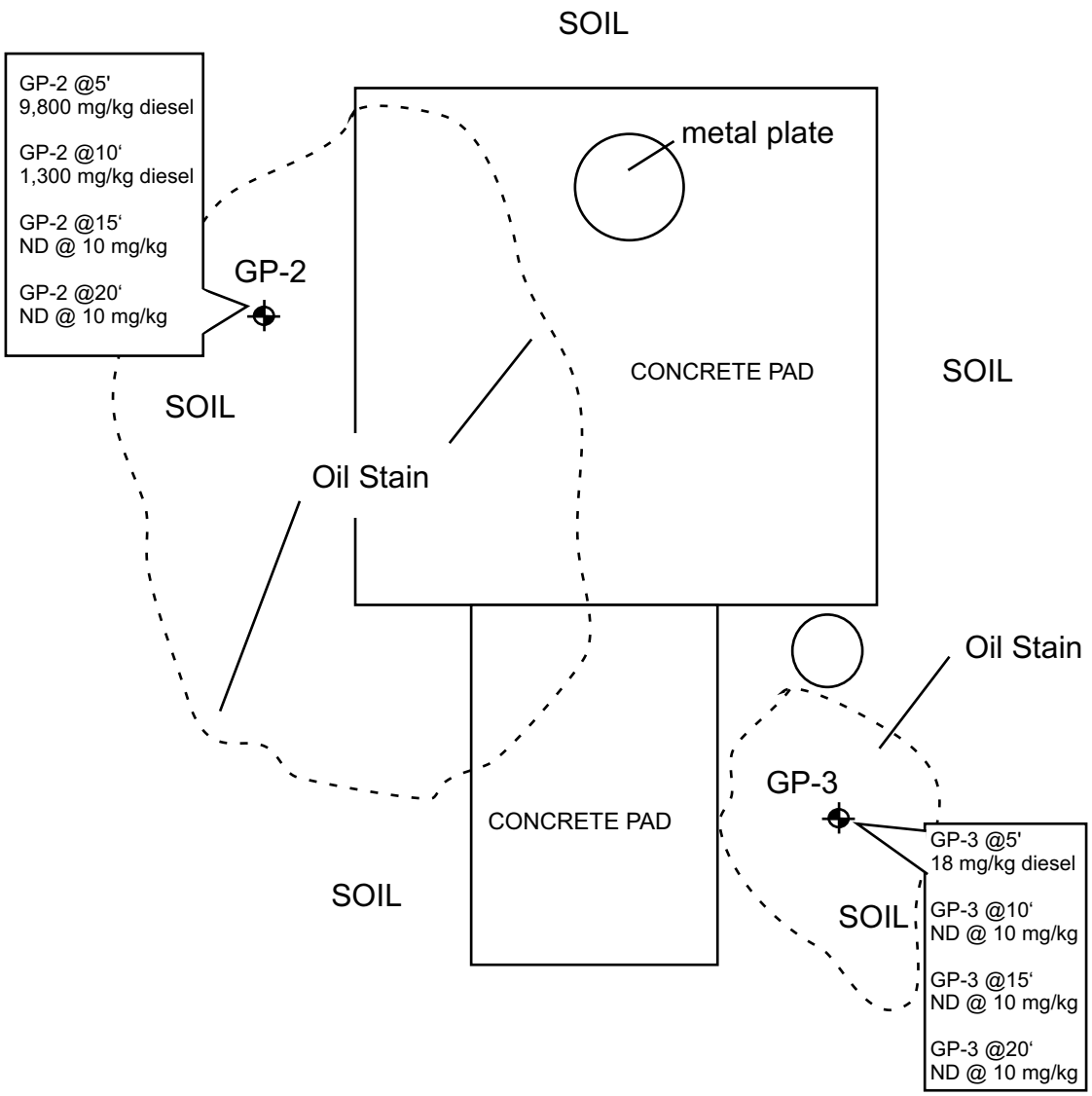
N

Site Address:	APNs 3256-006-012 & 013	Client Name:	NRG Solar
Site City/State:	Los Angeles County, California	Project No.:	0920-233-1

AVALON ENVIRONMENTAL CONSULTANTS
TUSTIN, CALIFORNIA

NOT TO SCALE

FIGURE 2



LEGEND

ND Not Detected at a detection level of 2.0 ug/kg

GP-2 Boring Locations

Distances and relationships are approximate.
This is NOT a Survey

BORING LOCATION AND DIESEL CONCENTRATION MAP

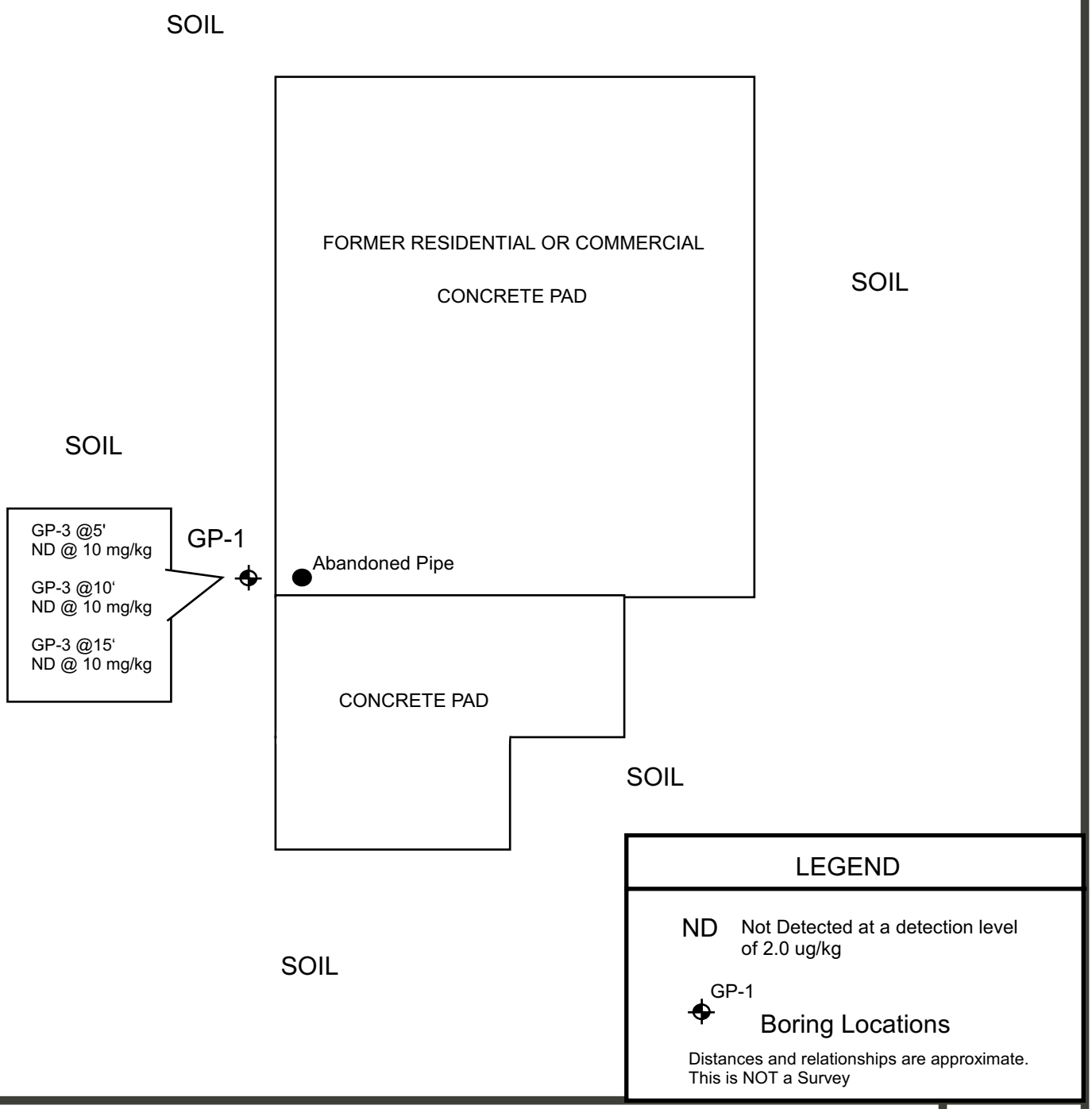
N

Site Address:	APNs 3256-006-012 and 13	Client Name:	NRG Energy
Site City/State:	Lancaster, California	Project No.:	0920-233-2

AVALON ENVIRONMENTAL CONSULTANTS
131 NORTH TUSTIN AVENUE, SUITE 213
TUSTIN, CALIFORNIA

0 5 10

FIGURE 3



BORING LOCATION AND DIESEL CONCENTRATION MAP

N

Site Address:	APNs 3256-006-012 and 13	Client Name:	NRG Energy
Site City/State:	Lancaster, California	Project No.:	0920-233-2

AVALON ENVIRONMENTAL CONSULTANTS
131 NORTH TUSTIN AVENUE, SUITE 213
TUSTIN, CALIFORNIA

0 10 20

FIGURE 4

APPENDIX II

SCOPE OF WORK
WORK PLAN

SCOPE OF SERVICES

Site Safety and Health Plan

Prior to subsurface testing, as required by law, a Site Safety and Health Plan will be prepared to insure that workers and sub-contractors are aware of the risks and safety procedures associated with this Phase II Subsurface Site Assessment. A copy of the Site Safety and Health Plan will be included in the final draft of our findings and conclusions.

Underground Service Alert

As required by law, Underground Service Alert (USA) will be contacted to check the proposed boring locations for conflict with public utilities, such as gas or electrical lines.

Subsurface Testing and Analysis

A total of three soil borings will be advanced to maximum depth of 15 below ground surface (bgs) or until refusal is met. Soil samples will be collected using a Geoprobe rig. Soil samples will be visually analyzed, described, and logged into a chain-of-custody form. All soil samples will be shipped under chain-of-custody to a certified laboratory.
Two of the soil borings will be placed near the possible water well and one boring will be placed near the exposed pipe in the foundation. During the probing, samples will be collected at five, ten and fifteen feet bgs. Soil samples will be analyzed for Total Petroleum Hydrocarbons (carbon-chain analysis) by EPA Modified Method 8015. In the event that elevated levels of hydrocarbons are detected in the gasoline range, benzene, toluene, ethylbenzene and xylene (BTEX) will be analyzed using EPA method 8020.
Groundwater is not anticipated to be encountered during this investigation.

Site Restoration

All bore holes will be properly backfilled with bentonite and patched with concrete, asphalt or native material following the sampling activities.

ASSESSMENT REPORT

At the conclusion of sample collection and analysis, a report of findings and conclusions will be prepared and submitted to the client. The report will include information obtained during this investigation regarding recognized environmental conditions impacting the subject property, documentation and copies of data collected during this investigation, and conclusions and recommendations based on this information.

APPENDIX III

HEALTH AND SAFETY PLAN

Site Safety and Health Plan

for

Phase II Subsurface Site Investigation

at

Near the intersection of
Avenue B-8 and 200 Street West
APN # 3256-006-012 ans 013

Los Angeles County, California 93536

TABLE OF CONTENTS

1.0 PURPOSE 1

2.0 OBJECTIVE 1

3.0 GENERAL SITE INFORMATION 2

4.0 SCOPE OF WORK 2
4.1 Description of Work to be Performed 2

5.0 PROJECT ORGANIZATION 3
5.1 Project Staffing/Chain of Command 3
5.2 Organization and Responsibilities 3

6.0 HAZARD EVALUATION 6
6.1 Contaminant/Waste Characteristics 6

7.0 GENERAL SAFETY REQUIREMENTS 7
7.1 Control of Work Area 8
7.2 Drill Rig Safety Guidelines 8
7.3 General Heavy Equipment Operation Safety Guidelines 10
7.4 Decontamination/Cleaning Activities Safety Guidelines 11
7.5 Sampling Activities Safety Guidelines 12

8.0 PERSONAL PROTECTIVE EQUIPMENT (PPE) 12
8.1 Level D Protection 12
8.2 Level C Protection 13
8.2.1 Criteria for Upgrading to Level C 13
8.3 Additional Protective Equipment 14
8.4 Personal Protective Equipment Restrictions 15
8.5 Selection Criteria for Coveralls 15

9.0 AIR MONITORING 15
9.1 Tasks Performed Within a Confined Space 16
9.2 Stopping Work 17
9.3 Air Sampling Protocol 17
9.4 Equipment Calibration and Maintenance 18
9.5 Documentation 18

10.0 CHEMICALS OF CONCERN 19

11.0 SPILL CONTAINMENT 19

12.0 WORKER DECONTAMINATION 20

13.0 JOB SITE HAZARDS 21
13.1 Slippery Surfaces 21
13.2 Organic Vapors 21
13.3 Flammable Vapors 21
13.4 Oxygen Enriched/Deprived Atmospheres 21
13.5 Noise 21
13.6 Surface and Equipment Contamination 22
13.7 Exposure - Heat Stress 22
13.8 Exposure - Cold Stress 23
13.9 Falling Objects 24
13.10 Vehicular Traffic 24
13.11 Monitoring Well Activities and Groundwater Sampling 24
13.12 Sample Preservation and Safety Procedures 24
13.13 Cleaning Equipment 24

14.0 EMERGENCY COMMUNICATION 24
14.1 Fire 25
14.2 Injury/Illness 25
14.3 Emergency Procedures 26
14.4 Air Releases 26
14.5 Weather 27
14.6 Work Site Access 27
14.7 Emergency Equipment 27
14.8 Carbon Treatment 27
14.9 Drilling Notification Procedures 28
14.10 Electrical Equipment and Ground-Fault Circuit Interrupters 29
14.11 Damage to a Utility 29
14.12 General Health 29
14.13 MSDS Information (When Available) 30

15.0 HEALTH AND SAFETY REQUIREMENTS 30
15.1 Medical Surveillance 30
15.2 Training Requirements 30
15.3 Respiratory Fit Testing 31

Avalon Environmental Consultants
SITE SAFETY AND HEALTH PLAN

CLIENT: **NRG Solar**

SITE ADDRESS: **Intersection of Ave B-8 and 200 St West, Los Angeles County**

CLIENT CONTACT: **Ray Kelly** **PHONE:** **760-710-2192**

PROPOSED START DATE: **7/27/10** **PROPOSED DURATION: One Day**

PROJECT SUPERVISOR: **Trevor Santochi**

1.0 PURPOSE

The purpose of the site Health and Safety Plan (HASP) is to provide Avalon Environmental Consultants' (Avalon) field personnel and subcontractors with an understanding of the potential chemical and physical hazards that exist or may arise while the tasks of this project are being performed.

This HASP describes the procedures to be followed in order to reduce employee exposure to potential health hazards which may be present at the project site. The emergency response procedures necessary to respond to such hazards are also described within this HASP.

2.0 OBJECTIVE

The primary objective is to ensure the well-being of all field personnel and the community surrounding this site. In order to accomplish this, project staff and approved subcontractors shall acknowledge and adhere to the policies and procedures established herein. Accordingly, all personnel assigned to this project shall read this site Health and Safety Plan and sign the Acknowledgment Statement (Appendix A) to certify that they have read, understood and agreed to abide by its provisions.

All subcontractors employed directly by Avalon are responsible for compliance with the requirements of this HASP and shall assure compliance with this HASP by all their officers, agents, employees and subcontractors. Avalon personnel have the authority to stop work performed by the subcontractors at this site if any work is not performed in accordance with the requirements of this HASP.

3.0 GENERAL SITE INFORMATION

General Site Description: Vacant Farmland

General Topography: Dirt ground and concrete

Is the site posted with warning signs: Yes ☐ No☒

Is the site presently secured from trespass: Yes ☐ No☒

If yes, describe:

4.0 SCOPE OF WORK

4.1 Description of Work to be Performed

A total of three soil borings will be advanced to a maximum depth of 15 feet below ground surface (bgs) or until refusal is met. Soil samples will be collected using a truck mounted Geoprobe rig. Soil samples will be visually analyzed, described, and logged into a chain-of-custody form. All soil samples will be shipped under chain-of-custody to a certified laboratory. As the geoprobe pushes through the soil as opposed to auguring as in a rotary drill, no soil cuttings are generated.

The three soil borings will be advanced to a maximum depth of fifteen feet below ground surface (bgs) or until refusal is met. Soil borings will be placed in areas containing stained soils and in areas where a former structure was located.

The soil samples will be collected at five and ten and fifteen feet bgs. All samples will be analyzed for total petroleum hydrocarbons (Carbon-Chain) by EPA Modified Method 8015.

Soil samples will be visually analyzed, described, and logged into a chain-of-custody form. All soil samples will be shipped under chain-of-custody to a certified laboratory. As the geoprobe pushes through the soil as opposed to auguring as in a rotary drill, no soil cuttings are generated.

5.0 PROJECT ORGANIZATION

5.1 Project Staffing/Chain of Command

Titles	Names	(Phone #/Pager)
Project Manager/FSS	Trevor Santochi	(714) 287-5760

Crew Size	No
Project Managers/FSS:	1
Equipment Operators:	2
Technicians:	0
Laborers:	0

5.2 Organization and Responsibilities

Avalon will oversee all phases of the project. The following management structure will be instituted for the purpose of successfully and safely completing this project.

Project Manager:

The Project Manager will be responsible for implementing the project and obtaining necessary personnel or resources for the completion of the project. Specific duties will include:

- Coordinating the activities of all subcontractors, to include informing them of the required Personal Protective Equipment (PPE) and ensuring their signature acknowledging this site Health and Safety Plan.
- Selecting a Field Safety Supervisor (FSS) and field personnel for the work to be undertaken on site.
- Ensuring that the tasks assigned are being completed as planned and on schedule.
- Providing authority and resources to ensure that the FSS is able to implement and manage safety procedures.
- Preparing reports and recommendations about the project to clients and affected project personnel.
- Ensuring that persons allowed to enter the site (i.e., EPA, contractors, state officials, visitors) are made aware of the potential hazards associated with the substances known or suspected to be on site and are knowledgeable as to the

location and contents of the on-site copy of the specific site safety plan.

- Ensuring that the FSS is aware of all of the provisions of this site safety plan and is instructing all personnel on site about the safety practices and emergency procedures defined in the plan.

- Ensuring that the FSS is making an effort to monitor site safety and has designated a Field Team Leader to assist with the responsibility when necessary.

Field Safety Supervisor (FSS):

The Field Safety Supervisor (FSS) shall be responsible for the implementation of the site safety plan on site. Specific duties will include:

- Evaluating health risk potential for each site activity and establishing action levels to adjust protective requirements.

- Implementing heat and cold stress monitoring and protective measures.

- Providing site specific health and safety information.

- Conducting periodic site inspections to ensure compliance with the HASP.

- Directing/instructing on-site personnel regarding appropriate actions and monitoring procedures throughout the project. The FSS will be available on-site during all work activities.

- Monitoring the compliance of field personnel for the routine and proper use of the PPE that has been designated for each task.

- Routinely inspecting PPE and clothing to ensure that it is in good condition and is being stored and maintained properly.

- Stopping work on the site or changing work assignments or procedures if any operation threatens the health and safety of workers or the public.

- Monitoring personnel who enter and exit the site and all controlled access points.

- Reporting any signs of fatigue, work-related stress or chemical exposures to the Project Manager and/or Health and Safety Manager.

- Dismissing field personnel from the site if their actions or negligence endangers themselves, co-workers or the public and reporting the same to the

Project Manager and Health and Safety Manager.

- Reporting any accidents or violations of the site safety plan to the Project Manager and documenting the same in the project records.

- Evaluating weather and chemical hazard information and making recommendations to the Project Manager about any modifications to workplans or personnel protection levels in order to maintain personnel safety.

- Approving all field personnel working on site, taking into consideration their level of safety training, their physical capacity and their eligibility to wear the protective equipment necessary for their assigned tasks (i.e., Respirator Fit Testing Results.)

- Overseeing the air monitoring procedures as they are carried out by the site personnel for compliance with all company health and safety policies.

- Knowledge of emergency procedures, evacuation routes and the telephone numbers of the ambulance, local hospital, poison control center, fire and police departments.

- Ensuring that all project-related personnel have signed the personnel agreement and acknowledgments form contained in this site safety plan.

- Coordinating upgrading and downgrading PPE with the Project Manager, as necessary, due to changes in exposure levels, monitoring results, weather and other site conditions.

- Performing air monitoring with approved instruments in accordance with requirements stated in this Health and Safety Plan.

Other Project Field Staff:

Responsibilities include:

- Adherence to this HASP during all field activities.

- Communicating its requirements to subcontractors and ensuring their compliance.

- Informing the FSS and the project manager of any health or safety related questions or issues that arise in the course of the field work.

Subcontractors:

Responsibilities include:

- Adherence to this HASP during all field activities or to more stringent requirements imposed by their own guidelines.
- Submission of documentation for training, medical surveillance and respirator fit testing requirements to the FSS prior to initiation of on-site activities.

6.0 HAZARD EVALUATION

The process of collecting subsurface samples by drilling, coring or trenching involves potential exposure to environmental contaminants. Potential chemical contaminants include total petroleum hydrocarbons (TPH).

Physical hazards will be involved in the operation of equipment used for the collection of subsurface samples. Equipment that may be used on the job site may include drill rigs, steam cleaners, pressure washers, drum dollies, backhoes, compressors and other equipment.

Potential hazards also include encountering buried utilities such as gas, electrical, sewer, water, telephone and cable television lines during drilling or trenching operations. Similarly, striking a buried container of hazardous materials can result in very high contaminant exposure and/or fire and explosion hazards.

6.1 Contaminant/Waste Characteristics:

General Forms: ☒ Solid ☐ Liquid ☐ Gas/Vapor

Chemicals of Concern:

☐ VOC ☒ Hydrocarbons

Hazard Determination: Low

Primary Hazard:

Inhalation of contaminated dust and/or vapors are the primary hazards to drill site personnel. However, ingestions of contaminated food/drink is also possible if personnel do not adequately decontaminate before these activities.

First Aid:

Ingestion: Give water if patient is conscious. Call Poison Control - follow instructions. Administer CPR if necessary. Seek medical attention.

Inhalation: Remove person from contaminated environment. Administer CPR if necessary. Seek medical attention,.

Skin Contact: Brush off dry material, remove contaminated clothing. Wash skin with soap and water. Seek medical attention if irritation develops.

Eye Contact: Flush eyes and surrounding tissue with water for 15 minutes. Seek medical attention.

* Exposure Symptoms: Headache, dizziness, nausea, drowsiness, irritation of eyes, nose, throat, breathing difficulties.

Report incident to Project Manger and Health and Safety Manager after emergency procedures have been implemented.

Potential Safety Hazards:

☒ Wet or slippery surfaces

☒ Surface debris (broken glass, sharp objects)

☒ Noise in excessive levels

☒ Hoses, tools, etc. lying on ground

☒ Cuts and bruises

Other Hazards Present on Site: None

Overall Site Hazard Summary: LOW

7.0 GENERAL SAFETY REQUIREMENTS

All personnel involved in subsurface investigations shall read and thoroughly understand this safety plan prior to entering and/or working on the site.

No project personnel may be allowed on the site without the prior knowledge and consent of the designated field safety supervisor and project manager.

There will be no on-site activities conducted without sufficient backup personnel. At a minimum, two persons must be present during on-site activities. Visual, voice or radio communication will be maintained at all times.

There will be no eating, drinking, application of cosmetics or smoking on the site.

Project personnel shall bring to the attention of the designated FSS any unsafe condition or practice associated with on-site project-related activities.

All boring, excavation, heavy equipment operation and general construction activities shall be performed in compliance with 29 CFR 1926.

All project personnel who are required to wear purifying or air supplied respirators must first meet the training and medical requirements of 29 CFR 1910.120 and 20 CFR 1910.134.

No contact lenses may be worn within 20 feet of drilling activity ("hot zone").

7.1 Control of Work Area

Prior to the start of work the work area shall be controlled to reduce the possibility of injury to workers or pedestrians. Control of the area will be accomplished by, but not limited to, the following:

Setting up physical barriers to exclude unnecessary personnel from the area and posting appropriate signage.

Establish the working zones (Exclusion Zone, Support Zone and Clean Zone) within the work site.

Minimize the number of personnel and equipment in the work area consistent with effective operations.

Establish control points to regulate access to work zones.

Prior to the start of work each shift, the FSS shall conduct an inspection of the devices used to control the work area. (See Appendix F, Site monitoring Log.)

7.2 Drill Rig Safety Guidelines

Drill rig maintenance and safety is the responsibility of the drilling operator. The following information is provided as general guidelines for safe practices on the site:

- No food or beverage will be consumed or stored in the operational area.
- The route of travel before moving the drill rig off-road should be inspected. Rocks, trees, erosion, power lines and uneven surfaces should be noted.
- No passengers shall be permitted in the cab while moving the drill rig into rough or sloped terrain.
- Multiple drive power trains (when available) on rig vehicle shall be mobilized

for off-road travel.

- Travel directly up or down grade on slopes is preferred.
- Changes in grade shall be approached squarely to avoid shifting loads or unexpected weighting.
- A spotter (person at grade) to provide guidance when vertical and lateral clearance is questionable shall be utilized.
- Use hand brakes and chock rig wheels when grades are steep.
- Rig mast shall be lowered when traveling off-road.
- All loads to rig shall be secured prior to off-road mobilization.
- Locate and treat overhead electrical lines as if they were energized.
- Utility agencies shall be contacted to de-activate overhead service in areas that interfere with drilling operations. Utilities shall be handled only by utility personnel.
- Utility agencies shall be contacted to survey, mark and flag locations of buried utility lines.
- Allow at least 20 feet clearance between rig mast and overhead utility lines. Prevent rig contact with utility lines.
- Stabilize and level each work site prior to drill rig setup.
- Maintain orderly housekeeping on and around the drill rig.
- Store tools, materials and supplies to allow safe handling by drill crew members. Proper storage on racks or sills will prevent spreading, rolling or sliding.
- Storage of tools, materials or supplies within or on the drill rig derrick during transportation shall be avoided.
- Store gasoline only in containers specifically designed or approved for such use.
- Wear eye protection when chipping, chiseling or breaking material that presents a risk of flying objects.

- Wear appropriate respiratory protection when performing dusty work. (i.e. concrete cutting, mixing cement etc.)

- Inspect wire, rope, hoisting hardware, swivels, hooks, bearings, sheaves, guides, rollers, clutches, brakes for the following: abrasions, breaks, wear, fatigue, corrosion, jamming and kinking.

- Suspension of loads when hoist is unattended should be avoided.

- Hoisting loads directly over field personnel shall not be permitted.

- Restrict hoisting operations during unfavorable environmental conditions such as rain or high winds.

- Maintain safe distance from hoisting equipment (e.g., wire rope, hooks, pinch points) when slack is reduced.

- Responsibilities of driller, geologists, field crew, etc. during drilling operations shall be established before work activities are initiated.

- Hand auger the first five feet in all borings.

- Begin auger borings slowly with the drive engine operating at low RPMs.

- Restrict contact with power coupling or auger during rotation.

- Prevent placing hands or feet under auger during rotation.

- Prevent placing hands or feet under auger sections during hoisting over hard surfaces.

- Avoid the removal of soil/cuttings with hands or feet.

- Cleaning shall occur when drill rig is in neutral and the augers are not rotating.

7.3 General Heavy Equipment Operation Safety Guidelines

Hazards/Controls

(1) The use of heavy equipment produces noise levels in excess of regulatory limits. During any activities involving the use of heavy equipment, ear plugs or ear muffs providing at least 25 NRR of protection must be worn.

(2) Since verbal communication is impossible, standardized/recognized hand signals must be used and should be reviewed by all personnel prior to job startup.

(3) It is the responsibility of all personnel to keep well back from operating equipment, since the equipment operator may have limited visibility.

(4) Prior to the use of cranes, verify that a current certification is available and perform an appropriate load test.

(5) Crane operations should be performed using tag lines and sufficient number of "chokers".

(6) Heat stress is a hazard, especially where PPE is required. Use work-rest regimens and maintain hydration.

Other Requirements

Only personnel that have been trained and certified in the use of heavy equipment may operate said equipment. Each piece of equipment must be trained on separately. Personnel involved in other specialized tasks must be appropriately trained prior to performing them.

7.4 Decontamination/Cleaning Activities Safety Guidelines

Hazards/Controls

- The fact that decontamination or cleaning activities are taking place implies that chemical contamination is present and must be protected against. In addition, the cleaning agents may be irritating, or worse, and protective measures must be implemented.

- Proper lockout/tagout procedures must be employed to prevent injury. Electrical circuits require special attention.

- Significant amounts of decontamination work must be in restricted work areas and from ladders, etc. Slips, trips and falls cause serious injury and good housekeeping is very important.

- Heat stress is a hazard, especially where PPE is required. Use work-rest regimens and maintain hydration.

Other Requirements

All decontamination operations that involve confined spaces, supplied air, etc., also

require the task specific training.

7.5 Sampling Activities Safety Guidelines

Hazards/Controls

- When opening drums, check first for pressure. Loosen the retaining ring part-way and lift lid gently. After insuring that no residual pressure is present, finish removing retaining ring.

- The need for sampling is often the result of "lack of knowledge" of the material, implying a somewhat unknown situation. PPE requirements and handling procedures must address this.

- Some sampling activities require use of special sampling equipment. Persons using this equipment should be trained prior to performing sampling.

- There is a concern of punctures and cuts. Special protective equipment will be required.

- Heat stress is a hazard, especially where PPE is required. Use work-rest regimens and maintain hydration.

8.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

Based on information gathered during prior investigations, the appropriate starting level of PPE for this project is Level D.

8.1 Level D Protection

The minimum ensemble (Level D) for work zone and decontamination work is as follows:

- Hard Hat

- Steel toe safety shoes or boots

- Safety Glasses

- Hearing Protection (if necessary)

Note: Contaminants are anticipated in some, if not most, areas of subsurface work; should evidence of contamination become apparent, then protective gloves, including a latex liner and chemical resistant outer gloves and Tyvek™ coverall will be required (see selection criteria below). In addition, latex over-boots (disposable) or reusable chemically resistant over-boots or steel toe over the sock rubber boots will be necessary. Provisions for decontamination must be established at any exclusion zone where non-disposable outer boots are to be worn.

For operations which require work gloves to protect the hands from abrasion, sharp edges, etc., leather (or equivalent) work gloves may be worn OVER chemical resistant gloves. Such gloves will be dedicated to exclusion zone work, but must be assumed to be chemically contaminated once put into service.

Upgrades of additional equipment may be mandated by the FSS based upon conditions or activities. Substitutions other than those described in this section are permissible only upon approval by the FSS.

8.2 Level C Protection

Consists of the addition of the following respiratory protection to the Level D ensemble (Section 8.1):

- Full face air purifying respirators with combination HEPA/organic vapor/acid cartridges.

- Eyeglass inserts MUST be provided for those employees who require prescription eyewear.

8.2.1 Criteria for Upgrading to Level C

The presence of any one of the following conditions shall be sufficient to require Level C PPE.

- Verified detection of combustible gas levels in the breathing zone using the combustible gas meter. The detection of methane is likely to be an indication of the presence of other contaminants.

- "Verified" organic vapor levels in the breathing zone, as measured by PID:

  $\geq$ 2 ppm above background, sustained for five minutes.
  $\geq$ 5 ppm above background, sustained for one minute.

- The detection of readings above background at the borehole/pit shall be noted in the sampling log as evidence of environmental contamination, but only breathing zone PID measurements shall be used for establishing respiratory protection criteria.

- Visible dust release (for example, during drill or when jack hammering concrete). Alternate NIOSH-approved dust respirators may be substituted for full face air purifying respirators with specific

approval by the FSS.

- The detection of chemical odors arising from boreholes.

- Once Level C protection is initiated, it will continue to be worn until the triggering condition returns to background levels.

- The term "verified" is used to indicate measurements that are confirmed by one or more of the following:

  (1) Detection of the contaminant using more than one instrument (i.e., verification by detector tubes, OVA, etc.)

  (2) Repeatable measurements - for example, if the PID indicates a reading above background, the meter should be moved upwind of the operation. If the reading falls and rises again upon returning the instrument to the original location, the initial measurement may be considered "verified".

  (3) If the meter response is not attributable to the borehole or excavated material, the meter should be checked for drift. If circumstances suggest a vapor source not related to the sampling process, the FSS should be immediately contacted for evaluation.

8.3 Additional Protective Equipment

American National Standard Institute (ANSI) approved safety glasses with side shields shall be required during chip-producing operations, such as drilling/jackhammering through concrete.

Splash-proof chemical goggles shall be mandated by the FSS for operations presenting splash or splatter potential, such as vehicle decontamination or wet drilling operations.

(Full face respirators preclude the need for other forms of eye protection.)

Hearing protection: Employees will be offered a choice of ear muffs or disposable ear plugs for use around high noise levels. The FSS shall base decisions as to what conditions require the use of hearing protection on the criteria set forth in Section 13.5.

8.4 Personal Protective Equipment Restrictions

Contact lenses will not be permitted in any exclusion zone.

Personnel who may be required to don respiratory protection shall be required to report to work clean shaven every day (in situations requiring face-to-facepiece seal.)

Personnel may only wear Level C respirator models for which the result of a previous fit test are on file with the FSS.

8.5 Selection Criteria for Coveralls

Uncoated Tyvek™ coveralls may be utilized for dry work.

Polyethylene-coated Tyvek™ coveralls shall be utilized for work which presents the potential for contact with contaminated liquids of wet mud (mud loose enough to splash or splatter.) Examples: Wet drilling, handling water samples, decontaminating vehicles.

Note: Vinyl rain suits may be substituted for polyethylene coated Tyvek™ provided decontamination procedures, approved by the HSO are implemented before use.

Saranex™ coveralls are to be worn during any TPH sampling and whenever indicated by the FSS.

9.0 AIR MONITORING

Air monitoring is conducted to identify and quantify airborne levels of hazardous substances, to determine appropriate levels of respiratory protection and to warn of the potential for Immediately Dangerous to Life and Health (IDLH), toxic or flammable atmospheric conditions.

The greatest potential hazards to safety and health at this site are:

1. Exposure to chemical vapors - through inhalation.
2. Exposure to chemical contamination - through skin contact and ingestion.

Ongoing air monitoring during project tasks will provide data to ensure that vapor concentrations are within acceptable ranges and will provide adequate selection criteria for respiratory and dermal protection. A Photo Ionization Detector (PID) shall be utilized for monitoring with a 1 part per million (ppm) detection limit.

- If PID readings taken in the breathing zone exceed 100 ppm, a NIOSH approved air-purifying respirator with organic vapor cartridges must be worn by all site workers within any area where monitoring results exceed 100 ppm.

- If PID readings taken in the breathing zone exceed 750 ppm, Level B protection will be required. Personnel must leave site immediately and contact FSS or Health & Safety Manager for further instructions.

- Respirator cartridges will be changed once per day as a minimum. This can be accomplished at the end of the work day during respirator decontamination. If odor breakthrough is detected while wearing the respirator or breathing becomes difficult, change cartridges immediately.

9.1 Tasks Performed Within a Confined Space

- Mechanical injuries and chemical injuries are possible when working in confined spaces. To minimize potential for these injuries, effective lockout/tagout and blocking/blinding procedures must be employed.

- Hazardous atmospheres may exist or develop within confined spaces. It is important to identify these atmospheres and to proceed to eliminate the condition and/or protect against it. Monitoring shall include oxygen, LEL and toxic contaminant readings. Regulatory limits for work conditions are:

19.5-23%	Oxygen
< 10%	LEL
< 100ppm	Toxic Contaminants

  Varying conditions will dictate PPE particulars. Monitoring will occur prior to entry and at specified intervals during entry. (Entry into IDLH atmospheres require HLR with egress or SCBA and the use of buddy team procedures.)

- Safe work practices and emergency rescue require specific equipment for confined space entries. <u>All</u> entry personnel will wear harnesses, lifelines and lanyards. (Exceptions by written variance from Health and Safety only.) Entry through top manways/openings require the use of an emergency extraction device.

- The minimum number of personnel for <u>any</u> entry is three (3). Depending on work tasks, more personnel may be required. The standby/rescue/ holewatch person must be dressed to the same level of protection, and in the same chemical protective clothing as the entry person(s). If the job is operating "under air", the rescue attendant must be supplied by a separate air source (2 pack of bottles or SCBA.)

- Physical apparatus and materials are common within confined spaces and can cause injury and/or may damage chemical protective clothing. Such structures indicate special PPE requirements and a cautious approach.

- All hazards must be identified and controls discussed with work team.

- Entries from elevated work surfaces have the same hazards and controls are the same as for any elevated work surface. Any other hazardous operations that occur within the confined spaces will be controlled, in most cases, in the same fashion as if the hazardous operation occurred outside the confined space.

- Heat stress is a hazard, especially where PPE is required. Use work-rest regimens and maintain hydration.

Other Requirements

Only personnel that have been trained and certified in Confined Space operations will be allowed to participate in these operations.

If the entry is done "under air", Supplied Air requirements must be adhered to as well.

9.2 Stopping Work

Criteria for stopping work and evacuating personnel from the work zone are listed below. Once work is stopped due to a reason listed below, operations, work practices and protective strategies will be re-evaluated and modified, if necessary, through consultation with the FSS prior to resuming activity.

The detection of combustible gas levels in excess of 25% (LEL) at the borehole or pit.

- "Verified" organic vapor levels of $\leq$ 50 ppm via the PID in the breathing zone.

- The detection of gaseous contaminants that cannot be removed by the Level C respirator at levels above 50% of the OSHA PEL as measured at the breathing zone via detector tubes. Example: H_2S, HCN, mercury vapor. EXCEPTION: Carbon monoxide - see below.

- Carbon monoxide (CO) levels in excess of the following levels (measurements via detector tubes may be used for the following determinations):

  a) In excess of 50 ppm for periods exceeding 15 minutes (breathing zone).

  b) In excess of 15 ppm for 30 minutes (breathing zone).

9.3 Air Sampling Protocol

Previous environmental investigations indicate the possibility of volatile organic compounds, such as tetrachloroethene (PCE). In the event air monitoring with a combination oxygen/combustible gas meter becomes appropriate, alarms shall be set at 19.5% oxygen, 25% LEL. The meter is to be set up with an extension probe or a length of Tygon tubing to allow sample to be drawn immediately adjacent to borehole.

- The following air/physical monitoring shall be conducted when the exclusion zones are occupied. When more than one exclusion zone exists at the same time (not anticipated), spot readings at all occupied exclusion areas shall be performed on a rotating basis.

- PID readings: Organic vapor monitoring shall be performed at the breathing zone and boreholes every 10 feet of drilling Results shall be logged on the Site Monitoring Log located in Appendix F.

- Personal sampling for: Organic vapors may be required at the discretion of the FSS.

9.4 Equipment Calibration and Maintenance

Oxygen/Combustible gas meters shall be calibrated daily against a cylinder of calibration gas of a suitable concentration, such as 25% LEL.

The PID shall be calibrated daily against isobutylene span gas and "zeroed" against organic-free zero air. Background levels measured at the site shall be noted daily, and used daily, as a baseline for detecting excursions during monitoring.

All instruments shall be charged and maintained as specified in their respective instrument manuals. This will be the responsibility of the FSS.

9.5 Documentation

The Site Monitoring Log (Appendix F) shall be used to document all air monitoring data. This log shall be used to record the following:

- Instrument calibrations

- Work zones established each day - list location and activity for each.

- Breathing zone and borehole readings.

  - type of instrument/reading

- location
- time of measurement
- activity
- actions taken in response to elevated levels

- Any unusual occurrences (injuries, incidents of non-compliance with HASP, instrument alarms sounding, etc.) or safety concerns.

- Upgrades/downgrades in PPE. The duration of use of Level C equipment shall be noted.

- Weather conditions each day (temperature, wind and precipitation) are sufficient.

10.0 CHEMICALS OF CONCERN

Health Effects

Potential health effects from a chemical exposure are dependent on several exposure factors such as: toxicity of substances, duration of exposure, concentration during exposure and the overall health of the person exposed.

The chemicals commonly at this site are: Volatile organic compounds. The following is a health analysis of these chemicals.

Additional information (When Available) of these chemicals can be found in the Material Safety Data Sheet located in Appendix D.

Total Petroleum Hydrocarbons

TPH is a mixture of many different compounds. Everyone is exposed to TPH from many sources, including gasoline pumps, spilled oil on pavement, and chemicals used at home or work. Some TPH compounds can affect your nervous system, causing headaches and dizziness. TPH has been found in at least 23 of the 1,467 National Priorities List sites identified by the Environmental Protection Agency (EPA).

Volatile Organic Componds

11.0 SPILL CONTAINMENT

The activities anticipated in the course of this project do not present likely scenarios for hazardous material sills. Sampling and decontamination media such as *hexane, acetone and nitric acid* will be handled in small containers.

Plastic sheeting surrounding boreholes shall be sized to contain the volume of spoil/water anticipated to be unearthed. Where significant quantities of potentially contaminated water will be handled, the sheeting will be bermed to prevent the flow of liquids to surrounding areas.

A supply of sorbents will be kept on-site sufficient to contain the contents of the largest single portable container of hazardous material (hexane, gasoline, acetone, etc.) The PPE present for field work is suitable for clean-up of spills of this nature.

12.0 WORKER DECONTAMINATION

Decontamination is required each time persons leave a work zone and there is reason to suspect soil contamination. Decontamination for this type of work relies heavily on the use of disposable PPE.

When personnel move between active work zones, minimal decontamination will be required. The Level D exclusion zone ensemble may be left on EXCEPT:

- Latex overboots shall be removed upon exiting any exclusion zone.
  ALTERNATIVE: Overboots may be washed in soap solution in a wash tub.

- Non-disposable rubber boots shall be washed in soap solution in a wash tub EACH TIME wearer leaves exclusion zone.

- Personnel who have removed or decontaminated boots, but who are wearing Level D exclusion zone PPE, must proceed on foot directly to the next exclusion zone.

When personnel are leaving a work area for any destination outside of a work zone, the following procedures shall be in effect:

- All duct tape is removed and discarded in designated disposal bag.

- Latex overboots are removed and discarded in designated disposal bag. (ALTERNATIVE: Non-disposable rubber boots shall be washed in soap solution in wash tub.)

- Outer gloves are removed and discarded in designated disposal bag.

- Coveralls are removed and discarded in designated disposal bag.

- Inner gloves are removed and discarded in designated disposal bag.

- Personnel shall proceed to nearest hand/face washing facilities before consuming food, beverages or tobacco products.

- If only light contact with excavation materials has occurred, latex overboots, coveralls and outer gloves may be set aside and reused during the next work period after a break.

NOTE: It is anticipated that all disposable components of the Level D ensemble will be used for a maximum of 4-5 hours before being discarded, since they will be discarded at lunch and at the end of the work day. Items that become torn or grossly contaminated will be replaced as needed.

13.0 JOB SITE HAZARDS

The following hazards may be encountered in this:

13.1 Slippery Surfaces

All employees must wear American National Standards Institute (ANSI)-approved work boots with steel toe protection. Skid proof soles are highly recommended.

13.2 Organic Vapors

The inhalation of volatile organic vapors during all operations can pose a potential health hazard. Hazard reduction procedures include monitoring the ambient air with a PID and/or FID and use of Personal Protective Equipment indicated on Table II. Workers should stand upwind of the source of contamination whenever possible. If ambient air levels in the breathing zone exceed 100 ppm, full face respirators equipped with organic vapor cartridges must be worn.

13.3 Flammable Vapors

Presence of flammable vapors can pose a potential fire hazard and health hazard. Hazard reduction procedures include monitoring the ambient air with an O_2/LEL meter. If the LEL reading exceeds 20%, leave the site immediately and contact the Fire Department.

13.4 Oxygen Enriched/Deprived Atmospheres

Atmospheres that contain a level of oxygen greater than 23% pose an extreme fire hazard (the usual ambient oxygen level is approximately 20.5%). All personnel encountering atmospheres that contain a level of Oxygen greater than 23% must evacuate the site immediately and must notify the Fire Department.

13.5 Noise

When exposure to sound levels in the field personnel's ear ("A") scale, slow response) is likely to be in excess of 90 Db for greater than 5 minutes or 85 Db for greater than 30 minutes, noise protection shall be worn. Thus, a sound level meter shall be present if these levels are likely to occur.

It is anticipated that work within ten (10) feet of a drill rig will be 85 Db or greater. Sound level meter (SLB) readings will be performed whenever obvious noise sources call for measurements. The SLM readings will be used to determine the need for mandatory hearing protection. Once specific operations/tools are documented as producing noise levels that require hearing protection, the FSS may enforce the use of hearing protection whenever the operation takes place. ANSI-approved hearing protection must be worn during noise operations such as drilling.

13.6 Surface and Equipment Contamination

Contact with contaminated surfaces, or surfaces suspected of being contaminated, should be avoided. This includes walking through, kneeling or placing equipment in puddles, mud, discolored surfaces, or on drums and other containers. Eating, smoking, drinking and/or the application of cosmetics is prohibited on this site in the immediate work area. This reduces the likelihood of contamination by ingestion.

13.7 Exposure - Heat Stress

Since climatic changes cannot be avoided, work schedules will be adjusted to provide time intervals for intake of juices, juice products and water in an area free from contamination and in quantity appropriate for fluid replacement.

Heat stress may occur even in moderate temperature areas and may present any or all of the following:

- Heat Rash: Result of continuous exposure to heat, humid air and chafing clothes. Heat rash is uncomfortable and decreases the ability to tolerate heat.

- Heat Cramps: Result of the inadequate replacement of body electrolytes lost through perspiration. Signs include severe spasms and pain in the extremities and abdomen.

- Heat Exhaustion: Result of increased stress on the vital organs of the body in the effort to meet the body's cooling demands. Signs include the following: shallow breathing; pale, cool moist skin; profuse sweating; dizziness.

- Heat Stroke: Result of overworked cooling system. Heat stroke is the most serious form of heat stress. Body surfaces must be cooled and medical help must be obtained immediately to prevent severe injury and/or death. Signs include the following: red, hot dry skin; absence of perspiration; nausea; dizziness and confusion; strong, rapid pulse. This can lead to coma and death.

Heat Stress Prevention

A. Replace body fluids (water and electrolytes) lost through perspiration. Solutions may include a 0.1% salt and water solution or commercial mixes such as Gatorade and Squench.

B. Administer cooling devices to aid the natural body ventilation. Cooling occurs through evaporation of perspiration and limited body contact with heat-absorbing protective clothing. Utilize fans and air conditioners to assist in evaporation. Long, cotton underwear is suggested to absorb perspiration and limit any contact with heat-absorbing protective clothing (i.e., coated Tyvek™ suits).

C. Provide hose-down mobile shower facilities to cool protective clothing and reduce body temperature.

D. Conduct non-emergency response activities in the early morning or evening during very hot weather.

E. Provide shelter against heat and direct sunlight to protect personnel.

F. Rotate workers wearing protective clothing during hot weather.

13.8 Exposure - Cold Stress

Work schedules will be adjusted to provide sufficient rest periods in a heated area for warming up during operations conducted in cold weather. Also thermal protective clothing such as wind and/or moisture resistant outerwear is recommended to be worn.

If work is performed continuously in the cold at or below -7°C (20°F), including wind chill temperature, heated warming shelters (tents, cabins, company vehicles, rest rooms, etc.) shall be made available nearby and the worker should be encouraged to use these shelters at regular intervals, the frequency depending on the severity of the environmental exposure. The onset of heavy shivering, frostnip, the feeling of excessive fatigue, drowsiness, irritability or euphoria are indications for immediate return to the shelter. When entering the heated shelter, the outer layer of clothing shall be removed and the remainder of the clothing loosened to permit sweat evaporation. A change of dry work clothing shall be provided as necessary to prevent worker from returning to their work with wet clothing. Dehydration, or the loss of body fluids, occurs in the cold environment and may increase the susceptibility of the worker to cold injury due to a significant change in blood flow to the extremities. Warm sweet drinks and soup should be provided at the work site to provide caloric intake and fluid volume. The intake of coffee should be limited. (Adapted from TLV's and Biological Exposure Indices 1988-1989; ACGI.)

13.9 Falling Objects

Hard hats must be worn by all personnel whenever construction-type activity is taking place. (i.e., drilling, excavation, trenching)

13.10 Vehicular Traffic

All employees will be required to wear a fluorescent safety vest at all times while on site. In addition, the following safety equipment procedures must be adhered to.

Task	Traffic Safety Equipment
Drilling	A

Safety Equipment Key:

A = Cones and barricades required - tapes and flags are recommended but optional.

13.11 Monitoring Well Activities and Groundwater Sampling

Skin and eye contact with contaminated groundwater and/or soil may occur during these tasks. Nitrile butyl rubber or neoprene gloves and approved safety goggles should be worn when contact with contaminated substance and/or splash is possible.

13.12 Sample Preservation and Safety Procedures

When hydrochloric acid is used, skin and eye contact can occur. This hazard can be reduced with the use of Nitrile butyl rubber or neoprene gloves and the use of safety goggles.

Skin and eye contact with contaminated soil and/or groundwater may occur during sampling. Nitrile-butyl or neoprene gloves and approved safety glasses should be warn during sampling activities.

13.13 Cleaning Equipment

Skin and eye contact with methanol, Alconox or other cleaning substances can occur while cleaning equipment. This hazard can be reduced with the use of Nitrile butyl rubber or neoprene gloves and the use of safety goggles.

14.0 EMERGENCY COMMUNICATION

Work areas (exclusion zones) will generally be staged within short walking distances of each other so that personnel in one area may quickly and directly summon assistance from other

work areas.

The telephone will be the primary means of communicating with sources of assistance not in the immediate work area. The FSS shall have a cellular phone on-site for use in an emergencies. It will be the responsibility of the FSS as Project Field Staff to familiarize themselves with the locations of telephones that will be accessible during emergencies.

The on-site personnel must also be able to accurately describe their work location(s) accurately to authorities in the event of an emergency requiring outside assistance.

14.1 Fire

A dry chemical fire extinguisher will be carried with each drill rig for use against small fires.

Only Factory Mutual (FM) approved fire safety cans will be used to transport and store flammable liquids. All gasoline and diesel-driven engines requiring refueling must be shut down and allowed to cool before filing. Smoking is not allowed during any operations within the work area in which petroleum products or solvents in free-floating, dissolved or vapor forms, or other flammable liquids may be present.

No open flame or spark is allowed in any area containing petroleum products or other flammable liquids.

14.2 Injury/Illness

The severity of on-site injury/illness will be assessed by on-site personnel. A first-aid kit will be available for minor injuries.

Conditions requiring medical treatment will be handled as follows:

- Minor Injury/Illness: Person will be assisted with decontamination and available on-site treatment will be rendered. If treatment by a physician is indicted, the person will be transported by car to the nearest emergency medical facility by project field staff.

- Major Injuries/Illness: If condition requires ambulance, emergency medical treatment will be summoned by dialing "911". If decontamination (could consist of cutting/tearing off contaminated protective clothing) can be performed without risking further injury or resulting in lost time, this shall be conducted while awaiting assistance in addition to whatever first aid may be rendered. It is anticipated the work on this project will not involve extremely hazardous contaminants. Medical personnel will be informed of the nature of potential contaminants on the victim by the FSS.

- The nearest Hospital is the Antelope Valley Hospital located approximately 25 miles east of the subject property. See attached map.

14.3 Emergency Procedures

Emergency Telephone Numbers:

Telephone located at: Jobsite cellular # (714) 287-5760

Ambulance/Fire/Police:	**911**
Poison Control:	(800) 777-6476
National Response Center:	(800) 424-8802
U.S. EPA (24-Hour Hotline):	(800) 424-9346
State Regulatory Agency:	(760) 710-2192
Client:	(714) 904-0553
Contact Person:	

Encountering Hazardous Situations (requiring evacuation)

In the event of an emergency, (i.e. fires, explosions or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil or surface water at the facility) the team member that observes this condition shall give an emergency alarm. The emergency alarm signal will be three horn blasts on the horn located in the site vehicle.

Actions to be taken will be dictated by the emergency. All appropriate local emergency response agencies shall be notified immediately. The police, fire department, emergency response teams and ambulance may be reached via telephone by dialing "911".

The nearest hospital and additional emergency contacts are listed on the previous page (Section 14.2).

Personnel encountering a hazardous situation shall instruct others on site to evacuate the vicinity immediately and call the Field Safety Supervisor and the Project Manager for instructions.

The site must not be re-entered until backup help, monitoring equipment and personal protective equipment is on hand.

14.4 Air Releases

The degree of releases of airborne contaminants that constitutes an emergency shall be determined by the FSS if circumstances permit. In general, it is unlikely that subsurface sampling operations will result in air releases of significance outside the

exclusion zone. Evidence of the spread of subsurface contaminants outside the exclusion zone (as detected by instruments) will require cessation of operations and capping of the borehole.

In the event of air release of contamination that can not be immediately controlled, field personnel will withdraw to an uncontaminated area and prevent non-project personnel from entering the area.

14.5 Weather

Severe weather shall serve as a basis to ease or suspend outdoor field operations. Examples include snow, high winds, temperature extremes and rain. Determinations of what conditions will require shutdown or postponement of operation shall be made through consultation between the Project Manager, FSS and Field Staff.

14.6 Work Site Access

Access within a five-foot radius of any on-site operation is prohibited to all but Avalon authorized field personnel and subcontractors.

14.7 Emergency Equipment

Vehicles used for site work will be equipped with a first aid kit and safety equipment including:

- fluorescent cones
- flags (as needed)
- barricades (as needed)
- fire extinguisher (dry chemical ABC-type extinguisher)
- flashlight
- water, suitable for drinking
- appropriate emergency bandage material

14.8 Carbon Treatment

If this site involves the use of a Carbon Treatment System, then the following information will apply:

> The Carbon Treatment System is equipped with an emergency shut-off. The system will shut off automatically when the non-methane TPH vapor concentrations in the intermediate line reach 5% of the Lower Explosive Limit (LEL) for gasoline as recorded by the system monitors.

The suggested equipment for decontamination and spill response procedures includes:

- wash tubs (3)
- plastic sheets
- trash bags
- scrub brushes
- detergent
- sorbent booms (as applicable)

The carbon system is a closed system where no chemicals are used. The potential for a spill is minimal; thus, spill containment is not addressed in this Site Safety Plan.

14.9 Drilling Notification Procedures

A Dig-Alert authorization number must be obtained prior to drilling.

During the drilling operation, two persons (one designed as "driller" and the other as "helper") must be present at all times. The helper (whether Avalon personnel or subcontractors) must be instructed as to the location of the emergency shut-off switch. Every attempt must be made to keep unauthorized personnel from entering the work area. If this is not possible, the operation should be shut down until the area is cleared. The area where the operation is taking place shall be cordoned off with a barricade. The FSS or the PM has the authority and the responsibility to shut down the drilling operations whenever a hazardous situation is deemed present.

The mast of the drilling rig must maintain a minimum clearance of 20 feet from any overhead electrical cables. All drilling operations will cease immediately during hazardous weather conditions such as high winds, heavy rain, lightening and snow.

Hard hats shall be worn at all times. Hearing protection shall be worn during noisy operations.

If product is encountered during the drilling operation, all work must stop in order for employees to upgrade personal protective equipment to Level C. A full-face respirator should be worn in order to prevent the inhalation of vapors and to provide face and eye protection from splashes. Coated tyvek suits, gloves and overboots should be worn to prevent skin contact with the soil.

Air monitoring must be performed in the work area to document breathing-zone concentrations. If air monitoring results indicate concentrations greater than 700 ppm, then Level B respiratory protection will be implemented.

Respirator cartridges must be changed at the end of a work period or if "breakthrough" occurs. If employees experience continuous cartridge "breakthrough", then the employee's work procedures and the level of respiratory protection must be re-evaluated by the Site Safety Officer and the Health and Safety Manager in order to determine the necessity of upgrading to Level B respiratory protection.

14.10 Electrical Equipment and Ground-Fault Circuit Interrupters

All electrical equipment and power cables in and around wells or structures suspected of containing chemical contamination must be intrinsically safe and equipped with a three-wire ground lead, rated explosion-proof for hazardous atmospheres. In accordance with OSHA 29 CFR 1926.404, approved ground fault circuit interrupters (GFCI) must be used for all 120 volt, single phase, 15 and 20 ampere receptacle outlets on the site which are in use by employees. Receptacles on the ends of extension cords are not part of the permanent wiring and therefore, must be protected by GFCI's whether or not the extension cord is plugged into permanent wiring.

The GFCI is a fast-acting circuit breaker which senses small imbalances in the circuit caused by current leakage to ground and, in a fraction of a second, shuts off the electricity. However, the GFCI will not protect the employee from line-to-line contact hazards (such as a person holding two "hot" wires or a hot and neutral wire in each hand.) The GFCI does provide protection against the most common form of electrical shock hazard - the ground fault. It also provides protection against fires, overheating and destruction of insulation on wiring.

GFCI's can be used successfully to reduce electrical hazards on construction sites. Tripping of GFCI's - interruption of current flow - is sometimes caused by wet connectors and tools. It is good practice to limit exposure of connectors and tools to excessive moisture by using watertight or sealable connectors. Providing more GFCI's or shorter circuits can prevent tripping caused by the cumulative leakage from several tools or by leakages from extremely long circuits. (Adapted from OSHA 307; Ground-Fault Protection on Construction sites, 1987.)

14.11 Damage to a Utility

In the event an underground utility (gas, electric, sewer, water, phone, etc.) is struck in the course of subsurface drilling, the local utility shall be notified as soon as possible after any fire or injuries are addressed as listed above.

14.12 General Health

Medicine and alcohol can increase the effects of exposure to toxic chemicals. Unless specifically approved by a qualified physician, prescription drugs should not be taken by personnel assigned to operations where the potential for absorption, inhalation or ingestion of toxic substances exists.

Drinking alcoholic beverages is prohibited. Drinking alcoholic beverages and driving is prohibited at any time. Driving at excessive speeds is always prohibited.

Skin abrasions must be thoroughly protected to prevent chemicals from penetrating the abrasion. It is recommended that contact lenses not be worn by persons working

on the site.

14.13 MSDS Information (When Available)

Material Safety Data Sheets (MSDS) on chemical substances encountered at the site shall be made available to all persons (including subcontractors) working at the site. These MSDS's shall be enclosed within this site safety plan in Appendix D. For emergency situations not specifically addressed by this site safety plan, refer to MSDS recommendations for action information.

15.0 HEALTH AND SAFETY REQUIREMENTS

15.1 Medical Surveillance

All subcontractor personnel and visitors who intend to enter the exclusion zones or decontamination areas shall participate in a medical surveillance program that meets the requirements of 29 CFR 1910.120.

All on-site personnel are included in the corporate medical monitoring program and receive physical examination on an annual basis.

Additional medical monitoring may be required if exposure or potential exposures are identified by the FSS for which such monitoring is deemed necessary. The content of this monitoring will be determined by the FSS and consulting physician.

The petrochemicals typical of these facilities can affect specific organ systems producing characteristic health effects. The medical evaluation will, therefore, focus on the liver, kidney, nervous system, blood systems, skin and lung functions. Laboratory testing will include complete blood count and applicable kidney and liver-function tests. Other tests include skin examination.

15.2 Training Requirements

All personnel (including subcontractors) whose work requires entry into exclusion zones, decontamination areas or otherwise present potential exposure to health or safety hazards associated with this project, shall meet the training requirements set forth in 29 CFR 1910.120, the OSHA Hazardous Waste Operations and Emergency Response Standard.

Personnel shall not be permitted to participate in or supervise activities in the exclusion or decontamination zones until they have completed the specified training. Written documentation of the completion of training (e.g., copies of course certificate) must be submitted to the FSS prior to entry into work areas.

Specifically, such personnel must complete:

- 40 hours of off-site instruction on the health and safety topics prescribed in 29 CFR 1910.120.

- 8 hours of refresher training within the past 12 months

- Site specific training

- Prior to the initiation of sampling activities, all personnel shall attend a tail-gate safety meeting conducted by the FSS. The training shall address the following:

    1. The content of this HASP, with emphasis on the hazards specific to this site, work rules, standard operating procedures, PPE requirements and decontamination.

    2. Site emergency procedures.

15.3 Respiratory Fit Testing

All personnel (including subcontractors) whose work requires entry into exclusion zones, decontamination areas or otherwise present potential exposure to health or safety hazards associated with this project, shall meet the respiratory protection requirements set forth in the HASP. All personnel shall have a current fit testing certificate for each type of respiratory protection equipment used.

APPENDIX A

HEALTH AND SAFETY PLAN REVIEW/TAILGATE HEALTH AND SAFETY MEETING

HEALTH AND SAFETY PLAN REVIEW/TAILGATE SAFETY MEETING

By signing below, I certify that I have reviewed the Site Specific Health and Safety Plan, and that I agree to abide by all requirements of the Plan, including all PPE requirements. I understand that if I have any questions I should discuss them with my Supervisor, or contact the Health and Safety Department. I further understand that I have the "Right to Refuse" unsafe work, subject to the conditions of the company policy. By signing below, I also hereby certify that I am free of drug and/or alcohol impairment, have attended the Tailgate Safety Meeting for this specific project, and in all ways prepared for work.

Print Name	Sign Name	Date

APPENDIX B

FIRE STATION LOCATION MAP

APPENDIX C

DEFINITION OF HAZARD EVALUATION GUIDELINES

DEFINITION OF HAZARD EVALUATION GUIDELINES

Hazard: Airborne Contaminants

Guideline	Explanation
Threshold Limit Value Time-Weighted Average (TLV-TWA)	The time-weighted average concentration for a normal 8-hour week day and a 40-hour work week, to which nearly all workers may be repeatedly exposed without adverse effect.
Permissible Exposure Limit (PEL)	Time-weighted average concentrations similar to (and in many cases derived from) the Threshold Limit Values.
Immediately Dangerous to Life and Health (IDLH)	"IDLH" or "Immediately dangerous to life or health" means any atmospheric condition that poses an immediate threat to life, or which is likely to result in acute or immediate severe health effects. This includes oxygen deficiency conditions.

Hazard: Explosion

Guideline	Explanation
Lower Explosive Limit	The minimum concentration of (LEL) vapor in air below which propagation of a flame will not occur in the presence of an ignition source.
Upper Explosive Limit (UEL)	The maximum concentration of vapor in the air above which propagation of a flame will not occur in the presence of an ignition source.

Hazard: Fire

Guideline	Explanation
Flash Point (flash p)	The lowest temperature at which the vapor of a combustible liquid can be made to ignite momentarily in air.

APPENDIX D

MSDS INFORMATION

No onsite MSDS information available.

APPENDIX E

ACCIDENT/INJURY FORM

ACCIDENT/INCIDENT/NEAR MISS REPORT

Employee's Name:_____ D.O.B._____/_____/_____

Address:_____ D.O.H._____/_____/_____

_____ SS#_____-_____-_____

Job Title:_____Supervisor's Name_____

Office Location:_____

Location at Time of Incident:_____

Date/Time of

Incident:_____

_____

Description: Describe clearly how the accident occurred:

_____

_____

Was Incident: Physical_____

Chemical_____

Part(s) of body

affected:_____

Exposure:Dermal_____Inhalation_____Ingestion_____

Witnesses: 1)_____

2)_____

Conditions/acts contributing to this

incident:_____

Explain specifically the corrective action you have taken to prevent a recurrence:

_____

Did the injured go to a doctor?_____When?_____

Where?_____

Did the injured go to a hospital?_____When?_____

Where?_____

Signatures:

_____ _____ _____

Employee Reporting Manager H&S Manager

_____/_____/_____ _____/_____/_____ _____/_____/_____

APPENDIX F

SITE MONITORING FORM

SITE MONITORING LOG

Site Name _____ Technician _____
Address _____ Equipment _____
Avalon Job No. _____ Calibration Gas _____

Date _____ Weather _____

DAILY SAFETY INSPECTION LIST	
( ) Work Area Barriers in Place	( ) Hard Hats
( ) Warning Signs Posted	( ) Steel Toed Boots
( ) Safety Cones in Place	( ) Protective Eyewear
( ) Traffic Blocked From Work Area	( ) Gloves
( ) Utilities Identified	( ) Hand Tool Inspection for Condition
( ) Tailgate Safety Meeting	( ) Safe Distance Between Workers
( ) Respiratory Protection (If necessary)	( ) Safe Lifting Practices

AIR MONITORING RECORD

TIME OF READING	LOCATION	ACTIVITY	READING/COMMENTS (ppm)

TIME OF READING	LOCATION	ACTIVITY	READING/COMMENTS (ppm)

APPENDIX IV

LABORATORY ANALYTICAL RESULTS

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

04 August 2010

Trevor Santochi
Avalon Environmental
131 N. Tustin #213
Tustin, CA 92780

RE: Lancaster

Enclosed are the results of analyses for samples received by the laboratory on 07/27/10 11:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Moore For John Shepler
Laboratory Director

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Avalon Environmental	Project: Lancaster	
131 N. Tustin #213	Project Number: [none]	**Reported:**
Tustin CA, 92780	Project Manager: Trevor Santochi	08/04/10 16:36

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GP-1@5'	T000743-01	Soil	07/27/10 07:30	07/27/10 11:40
GP-1@10'	T000743-02	Soil	07/27/10 07:30	07/27/10 11:40
GP-1@15'	T000743-03	Soil	07/27/10 07:30	07/27/10 11:40
GP-2@5'	T000743-05	Soil	07/27/10 07:30	07/27/10 11:40
GP-2@10'	T000743-06	Soil	07/27/10 07:30	07/27/10 11:40
GP-2@15'	T000743-07	Soil	07/27/10 07:30	07/27/10 11:40
GP-2@20'	T000743-08	Soil	07/27/10 07:30	07/27/10 11:40
GP-3@5'	T000743-09	Soil	07/27/10 07:30	07/27/10 11:40
GP-3@10'	T000743-10	Soil	07/27/10 07:30	07/27/10 11:40
GP-3@15'	T000743-11	Soil	07/27/10 07:30	07/27/10 11:40
GP-3@20'	T000743-12	Soil	07/27/10 09:30	07/27/10 11:40

SunStar Laboratories, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Kevin Moore For John Shepler, Laboratory Director

SunStar Laboratories, Inc.
Providing Quality Analytical Services Nationwide

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Lake Forest, California 92630
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949.297.5027 Fax

Avalon Environmental	Project: Lancaster	
131 N. Tustin #213	Project Number: [none]	**Reported:**
Tustin CA, 92780	Project Manager: Trevor Santochi	08/04/10 16:36

GP-1@5'

T000743-01 (Soil)

SunStar Laboratories, Inc.

Extractable Petroleum Hydrocarbons by 8015C

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C6-C12 (GRO)	ND	10	mg/kg	1	0072707	07/27/10	07/28/10	EPA 8015C	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*108 %*	*65-135*		"	"	"	"	

SunStar Laboratories, Inc.

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Kevin Moore For John Shepler, Laboratory Director

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Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Avalon Environmental	Project: Lancaster	
131 N. Tustin #213	Project Number: [none]	**Reported:**
Tustin CA, 92780	Project Manager: Trevor Santochi	08/04/10 16:36

GP-1@10'

T000743-02 (Soil)

SunStar Laboratories, Inc.

Extractable Petroleum Hydrocarbons by 8015C

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C6-C12 (GRO)	ND	10	mg/kg	1	0072707	07/27/10	07/28/10	EPA 8015C	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*107 %*	*65-135*		"	"	"	"	

SunStar Laboratories, Inc.

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Kevin Moore For John Shepler, Laboratory Director

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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949.297.5020 Phone
949.297.5027 Fax

Avalon Environmental	Project: Lancaster	
131 N. Tustin #213	Project Number: [none]	**Reported:**
Tustin CA, 92780	Project Manager: Trevor Santochi	08/04/10 16:36

GP-1@15'

T000743-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Extractable Petroleum Hydrocarbons by 8015C									
C6-C12 (GRO)	ND	10	mg/kg	1	0072707	07/27/10	07/28/10	EPA 8015C	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*104 %*	*65-135*		*"*	*"*	*"*	*"*	

SunStar Laboratories, Inc.

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Kevin Moore For John Shepler, Laboratory Director

SunStar Laboratories, Inc.
Providing Quality Analytical Services Nationwide

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Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Avalon Environmental	Project: Lancaster	
131 N. Tustin #213	Project Number: [none]	**Reported:**
Tustin CA, 92780	Project Manager: Trevor Santochi	08/04/10 16:36

GP-2@5'

T000743-05 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Extractable Petroleum Hydrocarbons by 8015C									
C6-C12 (GRO)	**2000**	10	mg/kg	1	0072707	07/27/10	07/28/10	EPA 8015C	
C13-C28 (DRO)	**9800**	10	"	"	"	"	"	"	
C29-C40 (MORO)	**920**	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*99.2 %*	*65-135*		"	"	"	"	
Volatile Organic Compounds by EPA Method 8260B									
Benzene	ND	5.0	ug/kg	1	0080212	08/02/10	08/03/10	EPA 8260B	
Toluene	ND	5.0	"	"	"	"	"	"	
Ethylbenzene	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	20	"	"	"	"	"	"	
Tert-butyl alcohol	ND	50	"	"	"	"	"	"	
Di-isopropyl ether	ND	20	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	20	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	20	"	"	"	"	"	"	
Surrogate: Toluene-d8		*105 %*	*85.5-116*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*404 %*	*75.1-121*		"	"	"	"	*S-GC*
Surrogate: Dibromofluoromethane		*101 %*	*90-135*		"	"	"	"	

SunStar Laboratories, Inc.

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Kevin Moore For John Shepler, Laboratory Director

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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Lake Forest, California 92630
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949.297.5027 Fax

Avalon Environmental	Project: Lancaster	
131 N. Tustin #213	Project Number: [none]	**Reported:**
Tustin CA, 92780	Project Manager: Trevor Santochi	08/04/10 16:36

GP-2@10'

T000743-06 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Extractable Petroleum Hydrocarbons by 8015C									
C6-C12 (GRO)	**230**	10	mg/kg	1	0072707	07/27/10	07/28/10	EPA 8015C	
C13-C28 (DRO)	**1300**	10	"	"	"	"	"	"	
C29-C40 (MORO)	**120**	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*102 %*	*65-135*		*"*	*"*	*"*	*"*	

SunStar Laboratories, Inc.

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Kevin Moore For John Shepler, Laboratory Director

SunStar Laboratories, Inc.
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949.297.5027 Fax

Avalon Environmental	Project: Lancaster	
131 N. Tustin #213	Project Number: [none]	**Reported:**
Tustin CA, 92780	Project Manager: Trevor Santochi	08/04/10 16:36

GP-2@15'

T000743-07 (Soil)

SunStar Laboratories, Inc.

Extractable Petroleum Hydrocarbons by 8015C

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C6-C12 (GRO)	ND	10	mg/kg	1	0072707	07/27/10	07/28/10	EPA 8015C	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*102 %*	*65-135*		"	"	"	"	

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Kevin Moore For John Shepler, Laboratory Director

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949.297.5027 Fax

Avalon Environmental	Project: Lancaster	
131 N. Tustin #213	Project Number: [none]	**Reported:**
Tustin CA, 92780	Project Manager: Trevor Santochi	08/04/10 16:36

GP-2@20'

T000743-08 (Soil)

SunStar Laboratories, Inc.

Extractable Petroleum Hydrocarbons by 8015C

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C6-C12 (GRO)	ND	10	mg/kg	1	0080301	08/02/10	08/03/10	EPA 8015C	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*97.8 %*	*65-135*		"	"	"	"	

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Kevin Moore For John Shepler, Laboratory Director

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Avalon Environmental	Project: Lancaster	
131 N. Tustin #213	Project Number: [none]	**Reported:**
Tustin CA, 92780	Project Manager: Trevor Santochi	08/04/10 16:36

GP-3@5'

T000743-09 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Extractable Petroleum Hydrocarbons by 8015C									
C6-C12 (GRO)	ND	10	mg/kg	1	0072707	07/27/10	07/28/10	EPA 8015C	
C13-C28 (DRO)	**18**	10	"	"	"	"	"	"	
C29-C40 (MORO)	**12**	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*101 %*	*65-135*		"	"	"	"	

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Kevin Moore For John Shepler, Laboratory Director

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Avalon Environmental	Project: Lancaster	
131 N. Tustin #213	Project Number: [none]	**Reported:**
Tustin CA, 92780	Project Manager: Trevor Santochi	08/04/10 16:36

GP-3@10'

T000743-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Extractable Petroleum Hydrocarbons by 8015C									
C6-C12 (GRO)	ND	10	mg/kg	1	0072707	07/27/10	07/28/10	EPA 8015C	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*80.2 %*	*65-135*		"	"	"	"	

SunStar Laboratories, Inc.

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Kevin Moore For John Shepler, Laboratory Director

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Avalon Environmental	Project: Lancaster	
131 N. Tustin #213	Project Number: [none]	**Reported:**
Tustin CA, 92780	Project Manager: Trevor Santochi	08/04/10 16:36

GP-3@15'

T000743-11 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Extractable Petroleum Hydrocarbons by 8015C									
C6-C12 (GRO)	ND	10	mg/kg	1	0072707	07/27/10	07/28/10	EPA 8015C	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*109 %*	*65-135*		*"*	*"*	*"*	*"*	

SunStar Laboratories, Inc.

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Kevin Moore For John Shepler, Laboratory Director

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Avalon Environmental	Project: Lancaster	
131 N. Tustin #213	Project Number: [none]	**Reported:**
Tustin CA, 92780	Project Manager: Trevor Santochi	08/04/10 16:36

GP-3@20'

T000743-12 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Extractable Petroleum Hydrocarbons by 8015C									
C6-C12 (GRO)	ND	10	mg/kg	1	0080301	08/02/10	08/03/10	EPA 8015C	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*105 %*	*65-135*		"	"	"	"	

SunStar Laboratories, Inc.

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Kevin Moore For John Shepler, Laboratory Director

SunStar Laboratories, Inc.
Providing Quality Analytical Services Nationwide

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Avalon Environmental	Project: Lancaster	
131 N. Tustin #213	Project Number: [none]	**Reported:**
Tustin CA, 92780	Project Manager: Trevor Santochi	08/04/10 16:36

Extractable Petroleum Hydrocarbons by 8015C - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0072707 - EPA 3550B GC										
Blank (0072707-BLK1)				Prepared: 07/27/10		Analyzed: 07/28/10				
C6-C12 (GRO)	ND	10	mg/kg							
C13-C28 (DRO)	ND	10	"							
C29-C40 (MORO)	ND	10	"							
Surrogate: p-Terphenyl	*79.6*		*"*	*100*		*79.6*	*65-135*			
LCS (0072707-BS1)				Prepared: 07/27/10		Analyzed: 07/28/10				
C13-C28 (DRO)	450	10	mg/kg	500		89.5	75-125			
Surrogate: p-Terphenyl	*80.4*		*"*	*100*		*80.4*	*65-135*			
Matrix Spike (0072707-MS1)		**Source: T000743-01**		Prepared: 07/27/10		Analyzed: 07/28/10				
C13-C28 (DRO)	480	10	mg/kg	500	ND	97.0	75-125			
Surrogate: p-Terphenyl	*96.7*		*"*	*100*		*96.7*	*65-135*			
Matrix Spike Dup (0072707-MSD1)		**Source: T000743-01**		Prepared: 07/27/10		Analyzed: 07/28/10				
C13-C28 (DRO)	470	10	mg/kg	500	ND	93.2	75-125	3.96	20	
Surrogate: p-Terphenyl	*96.3*		*"*	*100*		*96.3*	*65-135*			
Batch 0080301 - EPA 3550B GC										
Blank (0080301-BLK1)				Prepared: 08/02/10		Analyzed: 08/03/10				
C6-C12 (GRO)	ND	10	mg/kg							
C13-C28 (DRO)	ND	10	"							
C29-C40 (MORO)	ND	10	"							
Surrogate: p-Terphenyl	*83.4*		*"*	*100*		*83.4*	*65-135*			
LCS (0080301-BS1)				Prepared: 08/02/10		Analyzed: 08/03/10				
C13-C28 (DRO)	430	10	mg/kg	500		85.8	75-125			
Surrogate: p-Terphenyl	*83.7*		*"*	*100*		*83.7*	*65-135*			

SunStar Laboratories, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Kevin Moore For John Shepler, Laboratory Director

SunStar Laboratories, Inc.
Providing Quality Analytical Services Nationwide

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Avalon Environmental	Project: Lancaster	
131 N. Tustin #213	Project Number: [none]	**Reported:**
Tustin CA, 92780	Project Manager: Trevor Santochi	08/04/10 16:36

Extractable Petroleum Hydrocarbons by 8015C - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0080301 - EPA 3550B GC										
Matrix Spike (0080301-MS1)		**Source: T000743-08**		Prepared: 08/02/10		Analyzed: 08/03/10				
C13-C28 (DRO)	420	10	mg/kg	500	ND	84.5	75-125			
Surrogate: p-Terphenyl	*80.6*		*"*	*100*		*80.6*	*65-135*			
Matrix Spike Dup (0080301-MSD1)		**Source: T000743-08**		Prepared: 08/02/10		Analyzed: 08/03/10				
C13-C28 (DRO)	440	10	mg/kg	500	ND	87.4	75-125	3.39	20	
Surrogate: p-Terphenyl	*80.7*		*"*	*100*		*80.7*	*65-135*			

SunStar Laboratories, Inc.

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Kevin Moore For John Shepler, Laboratory Director

SunStar Laboratories, Inc.
Providing Quality Analytical Services Nationwide

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Avalon Environmental	Project: Lancaster	
131 N. Tustin #213	Project Number: [none]	**Reported:**
Tustin CA, 92780	Project Manager: Trevor Santochi	08/04/10 16:36

Volatile Organic Compounds by EPA Method 8260B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0080212 - EPA 5030 GCMS										
Blank (0080212-BLK1)				Prepared: 08/02/10	Analyzed: 08/03/10					
Benzene	ND	5.0	ug/kg							
Toluene	ND	5.0	"							
Ethylbenzene	ND	5.0	"							
m,p-Xylene	ND	5.0	"							
o-Xylene	ND	5.0	"							
Tert-amyl methyl ether	ND	20	"							
Tert-butyl alcohol	ND	50	"							
Di-isopropyl ether	ND	20	"							
Ethyl tert-butyl ether	ND	20	"							
Methyl tert-butyl ether	ND	20	"							
Surrogate: Toluene-d8	*39.7*		*"*	*40.0*		*99.2*	*85.5-116*			
Surrogate: 4-Bromofluorobenzene	*36.8*		*"*	*40.0*		*92.1*	*75.1-121*			
Surrogate: Dibromofluoromethane	*38.0*		*"*	*40.0*		*95.0*	*90-135*			
LCS (0080212-BS1)				Prepared: 08/02/10	Analyzed: 08/04/10					
Chlorobenzene	91.8	5.0	ug/kg	100		91.8	75-125			
1,1-Dichloroethene	83.6	5.0	"	100		83.6	75-125			
Trichloroethene	96.4	5.0	"	100		96.4	75-125			
Benzene	92.6	5.0	"	100		92.6	75-125			
Toluene	95.2	5.0	"	100		95.2	75-125			
Surrogate: Toluene-d8	*39.6*		*"*	*40.0*		*99.0*	*85.5-116*			
Surrogate: 4-Bromofluorobenzene	*42.2*		*"*	*40.0*		*105*	*75.1-121*			
Surrogate: Dibromofluoromethane	*38.5*		*"*	*40.0*		*96.2*	*90-135*			
Matrix Spike (0080212-MS1)		**Source: T000768-28**		Prepared: 08/02/10	Analyzed: 08/04/10					
Chlorobenzene	88.9	5.0	ug/kg	100	ND	88.9	75-125			
1,1-Dichloroethene	89.1	5.0	"	100	ND	89.1	75-125			
Trichloroethene	98.1	5.0	"	100	ND	98.1	75-125			
Benzene	114	5.0	"	100	6.10	108	75-125			
Toluene	95.1	5.0	"	100	ND	95.1	75-125			
Surrogate: Toluene-d8	*38.7*		*"*	*40.0*		*96.8*	*85.5-116*			
Surrogate: 4-Bromofluorobenzene	*41.0*		*"*	*40.0*		*102*	*75.1-121*			
Surrogate: Dibromofluoromethane	*40.0*		*"*	*40.0*		*100*	*90-135*			

SunStar Laboratories, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Kevin Moore For John Shepler, Laboratory Director

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Avalon Environmental	Project: Lancaster	
131 N. Tustin #213	Project Number: [none]	**Reported:**
Tustin CA, 92780	Project Manager: Trevor Santochi	08/04/10 16:36

Volatile Organic Compounds by EPA Method 8260B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0080212 - EPA 5030 GCMS										
Matrix Spike Dup (0080212-MSD1)		**Source: T000768-28**		Prepared: 08/02/10	Analyzed: 08/04/10					
Chlorobenzene	84.6	5.0	ug/kg	100	ND	84.6	75-125	4.96	20	
1,1-Dichloroethene	84.6	5.0	"	100	ND	84.6	75-125	5.12	20	
Trichloroethene	93.0	5.0	"	100	ND	93.0	75-125	5.39	20	
Benzene	114	5.0	"	100	6.10	108	75-125	0.350	20	
Toluene	88.6	5.0	"	100	ND	88.6	75-125	7.02	20	
Surrogate: Toluene-d8	*38.4*		*"*	*40.0*		*96.1*	*85.5-116*			
Surrogate: 4-Bromofluorobenzene	*41.8*		*"*	*40.0*		*104*	*75.1-121*			
Surrogate: Dibromofluoromethane	*40.2*		*"*	*40.0*		*100*	*90-135*			

SunStar Laboratories, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Kevin Moore For John Shepler, Laboratory Director

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Avalon Environmental	Project:	Lancaster	
131 N. Tustin #213	Project Number:	[none]	**Reported:**
Tustin CA, 92780	Project Manager:	Trevor Santochi	08/04/10 16:36

Notes and Definitions

S-GC	Surrogate recovery outside of established control limits. The data was accepted based on valid recovery of the remaining surrogate(s).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

SunStar Laboratories, Inc.
3002 Dow Ave, Suite 212
Tustin, CA 92780
714-505-4010

Chain of Custody Record

Client: AVALON ENV. CONSULTANTS
Address: 131 N. TUSTIN AVE
Phone: 714-836-6632 Fax: 714-836-6642
Project Manager: T. SANTOCHE

Date: 7-27-10 Page: 1 Of 1
Project Name: LANCASTER
Collector: T. SANTOCHE Client Project #:
Batch #: T000743

COC 80566

Sample ID	Date Sampled	Time	Sample Type	Container Type	8260	8260 + OXY	8260 BTEX, OXY only	8270	8021 BTEX	8015M (gasoline)	8015M (diesel)	8015M Ext./Carbon Chain	6010/7000 Title 22 Metals					Laboratory ID #	Comments/Preservative	Total # of containers
GP-1@5'	7/27/10	7:30A	SOIL	ACETATE								X								1
GP-1@10'												X								1
GP-1@15'												X								1
GP-2@1'																			HOLD	1
GP-2@5'												X								1
GP-2@10'												X								1
GP-2@15'												X								1
GP-2@20'																			HOLD	1
GP-3@5'												X								1
GP-3@10'												X								1
GP-3@15'												X								1
GP-3@20'		9:30A																	HOLD	1

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
[signature]	7/27/10 11:40A	[signature]	7/27/10 1140
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers	12
Chain of Custody seals Y/N/NA	N
Seals intact? Y/N/NA	N/A
Received good condition/cold	Y 7.2°

Turn around time:

Notes
GP-2 & 3 Dated_

Sample disposal Instructions: Disposal @ $2.00 each ____ Return to client ____ Pickup ____

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

SAMPLE RECEIVING REVIEW SHEET

BATCH # T000743

Client Name: Avalon Environmental Project: Lancaster

Received by: Dan Date/Time Received: 7/27/10 1140

Delivered by : ☒ Client ☐ SunStar Courier ☐ GSO ☐ FedEx ☐ Other _____

Total number of coolers received 1 **Temp criteria = 6°C > 0°C (no frozen containers)**

Temperature: cooler #1 7.4° °C +/- the CF (- 0.2°C) = 7.2 °C corrected temperature

cooler #2 _____ °C +/- the CF (- 0.2°C) = _____ °C corrected temperature

cooler #3 _____ °C +/- the CF (- 0.2°C) = _____ °C corrected temperature

Samples outside temp. but received on ice, w/in 6 hours of final sampling.	☒ Yes	☐ No*	☐ N/A
Custody Seals Intact on Cooler/Sample	☐ Yes	☐ No*	☒ N/A
Sample Containers Intact	☒ Yes	☐ No*	
Sample labels match COC ID's	☒ Yes	☐ No*	
Total number of containers received match COC	☒ Yes	☐ No*	
Proper containers received for analyses requested on COC	☒ Yes	☐ No*	
Proper preservative indicated on COC/containers for analyses requested	☐ Yes	☐ No*	☒ N/A

Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times. ☒ **Yes** ☐ **No***

* Complete Non-Conformance Receiving Sheet if checked Cooler/Sample Review - Initials and date MM 7/27/10

Comments:

APPENDIX V

BORING LOGS

AVALON ENVIRONMENTAL CONSULTANTS
131 NORTH TUSTIN AVENUE, SUITE 213
TUSTIN, CALIFORNIA

BORING NO. GP-1

CLIENT: NRG Solar	SITE: APN# 3256-006-012 and 013
PROJECT NO.: 0920-223-2	SURFACE ELEVATION:
DRILL DATE: July 27, 2010	INITIAL WATER LEVEL: Groundwater not encountered
METHOD/EQUIPMENT: Geoprobe	FINAL WATER LEVEL:
DRILLING CONTRACTOR: Kehoe Testing	TOTAL DEPTH: 15 Feet
GEOLOGISTS: Trevor Santochi	LOGGED BY Trevor Santochi

DEPTH (FEET)	SAMPLE NO.	PID (ppm)	PROFILE	GRAPHIC LOG	GEOLOGIC DESCRIPTION	REMARKS
1.0						
5.0	GP-1@ 5'				Medium light brown silty sand, hard, dry	No odor
10.0	GP-1@ 10'				Medium brown silty sand, well indurated dry.	No odor
15.0	GP-1@ 15'				Medium dark brown silty clay, moist. TOTAL DEPTH 15 FEET	No odor

Tot

AVALON ENVIRONMENTAL CONSULTANTS
131 NORTH TUSTIN AVENUE, SUITE 213
TUSTIN, CALIFORNIA

BORING NO. GP-2

CLIENT: NRG Solar	SITE: APN# 3256-006-012 and 013
PROJECT NO.: 0920-223-2	SURFACE ELEVATION:
DRILL DATE: July 27, 2010	INITIAL WATER LEVEL: Groundwater not encountered
METHOD/EQUIPMENT: Geoprobe	FINAL WATER LEVEL:
DRILLING CONTRACTOR: Kehoe Testing	TOTAL DEPTH: 20 Feet
GEOLOGISTS: Trevor Santochi	LOGGED BY Trevor Santochi

DEPTH (FEET)	SAMPLE NO.	PID (ppm)	PROFILE	GRAPHIC LOG	GEOLOGIC DESCRIPTION	REMARKS
1.0	GP-2@ 1'				Medium to Dark brown silty sand, moist, stained	Strong petroleum odor
5.0	GP-2@ 5'				Medium to dark brown silty sand, moist, stained	Strong petroleum odor
10.0	GP-2@ 10'				Medium to dark brown silty sand, moist,	Slight petroleum odor
15.0	GP-2@ 15'				Medium to dark brown silty sand, moist,	Slight petroleum odor

Tot

AVALON ENVIRONMENTAL CONSULTANTS
131 NORTH TUSTIN AVENUE, SUITE 213
TUSTIN, CALIFORNIA

BORING NO. GP-2

CLIENT: NRG Solar	SITE: APN# 3256-006-012 and 013
PROJECT NO.: 0920-223-2	SURFACE ELEVATION:
DRILL DATE: July 27, 2010	INITIAL WATER LEVEL: Groundwater not encountered
METHOD/EQUIPMENT: Geoprobe	FINAL WATER LEVEL:
DRILLING CONTRACTOR: Kehoe Testing	TOTAL DEPTH: 20 Feet
GEOLOGISTS: Trevor Santochi	LOGGED BY Trevor Santochi

DEPTH (FEET)	SAMPLE NO.		PID (ppm) PROFILE	GRAPHIC LOG	GEOLOGIC DESCRIPTION	REMARKS
20.0	GP-2@ 5'				Medium to dark brown Moist, moist, stained	No odor
					TOTAL DEPTH 20 FEET	
25.0						
30.0						

Tot

AVALON ENVIRONMENTAL CONSULTANTS
131 NORTH TUSTIN AVENUE, SUITE 213
TUSTIN, CALIFORNIA

BORING NO. GP-3

CLIENT: NRG Solar	SITE: APN# 3256-006-012 and 013
PROJECT NO.: 0920-223-2	SURFACE ELEVATION:
DRILL DATE: July 27, 2010	INITIAL WATER LEVEL: Groundwater not encountered
METHOD/EQUIPMENT: Geoprobe	FINAL WATER LEVEL:
DRILLING CONTRACTOR: Kehoe Testing	TOTAL DEPTH: 20 Feet
GEOLOGISTS: Trevor Santochi	LOGGED BY Trevor Santochi

DEPTH (FEET)	SAMPLE NO.	PID (ppm)	PROFILE	GRAPHIC LOG	GEOLOGIC DESCRIPTION	REMARKS
1.0						
5.0	GP-3@ 5'				Medium to dark brown silty sand, moist, stained	Strong petroleum odor
10.0	GP-3@ 10'				Medium to dark brown silty sand, moist,	Slight petroleum odor
15.0	GP-3@ 15'				Medium to dark brown silty sand, moist,	No odor

Tot

AVALON ENVIRONMENTAL CONSULTANTS
131 NORTH TUSTIN AVENUE, SUITE 213
TUSTIN, CALIFORNIA

BORING NO. GP-3

CLIENT: NRG Solar	SITE: APN# 3256-006-012 and 013
PROJECT NO.: 0920-223-2	SURFACE ELEVATION:
DRILL DATE: July 27, 2010	INITIAL WATER LEVEL: Groundwater not encountered
METHOD/EQUIPMENT: Geoprobe	FINAL WATER LEVEL:
DRILLING CONTRACTOR: Kehoe Testing	TOTAL DEPTH: 20 Feet
GEOLOGISTS: Trevor Santochi	LOGGED BY Trevor Santochi

DEPTH (FEET)	SAMPLE NO.		PID (ppm) PROFILE	GRAPHIC LOG	GEOLOGIC DESCRIPTION	REMARKS
20.0	GP-3@ 5'				Medium to dark brown Moist, moist, stained	No odor
					TOTAL DEPTH 20 FEET	
25.0						
30.0						

Tot

Appendix M
Agency Comment Letters

Antelope Valley
Air Quality Management District

Antelope Valley Air Quality Management District
43301 Division St., Suite 206
Lancaster, CA 93535-4649

661.723.8070
Fax 661.723.3450

Eldon Heaston, Executive Director

September 20, 2010

Anthony Curzi
Los Angeles County Dept. of Regional Planning
320 West Temple Street
Los Angeles, CA 90012

Project Description: The Alpine Solar Project R2009-02089

Mr. Curzi:

The Antelope Valley Air Quality Management District (District) has received the Mitigated Negative Declaration for The Alpine Solar Project consisting of a 92-megawatt (MW) solar photovoltaic (PV) energy facility on approximately 580 acres of an 800-acre site located in the rural area of the Antelope Valley in the northern portion of Los Angeles County.

Based on our review of the Mitigated Negative Declaration, the District concurs with the air and dust mitigation measures and has no further comments.

Thank you for the opportunity to review this planning document. If you have any questions regarding this letter, please contact me at (661) 723-8070 or Julie McKeehan at ext. 8
Sincerely,

Bret Banks
Operations Manager

BB/jm LA County - The Alpine Solar Project.doc

SEP 22 2010

Printed on recycled paper

Clean Cities
Antelope Valley

DEPARTMENT OF TRANSPORTATION
DISTRICT 7, REGIONAL PLANNING
IGR/CEQA BRANCH
100 MAIN STREET, MS # 16
LOS ANGELES, CA 90012-3606
PHONE: (213) 897-8391
FAX: (213) 897-1337

SEP 16 2010

Flex your power!
Be energy efficient!

IGR/CEQA No. 100917AL-MND
R2009-02089
Alpine Solar Project
Vic. LA-138 / PM 18.065

September 15, 2010

Mr. Paul McCarthy
Impact Analysis
Department of Regional Planning
Los Angeles County
320 West Temple Street
Los Angeles, CA 90012

Dear Mr. McCarthy:

Thank you for including the California Department of Transportation (Department) in the environmental review process for the above referenced project. The proposed project includes the construction of a 92-megawatt (MW) solar photovoltaic (PV) energy facility on approximately 580 acres of the 800-acre site.

Please be reminded that any work to be performed within the State Right-of-way will need an Encroachment Permit from the Department. Any modifications to State facilities will need to meet all mandatory design standard and specifications.

Transportation of heavy construction equipment and/or materials, which requires the use of oversized-transport vehicles on State highways, will require a transportation permit from the Department. It is recommended that large size truck trips be limited to off-peak commute periods. In addition, a truck/traffic construction management plan is needed for this project.

If you have any questions, please feel free to contact me at (213) 897-8391 and refer to IGR/CEQA No. 100917AL.

Thank you for the opportunity to review this project.

Sincerely,

Alan Lin

ALAN LIN, P.E.
IGR/CEQA Project Coordinator

cc: Scott Morgan, State Clearinghouse

California Regional Water Quality Control Board
Lahontan Region

Linda S. Adams
Secretary for Environmental Protection

2501 Lake Tahoe Boulevard, South Lake Tahoe, California 96150
(530) 542-5400 • Fax (530) 544-2271
www.waterboards.ca.gov/lahontan

Arnold Schwarzenegger
Governor

October 7, 2010

Anthony Curzi, Planner
Los Angeles County
320 West Temple Street
Los Angeles, CA 90012

COMMENTS REGARDING THE MITIGATED NEGATIVE DECLARATION FOR THE ALPINE SOLAR PROJECT (PROJECT NO. R2009-02089), ANTELOPE VALLEY, LOS ANGELES COUNTY

The California Regional Water Quality Control Board, Lahontan Region (Water Board) received a copy of the above-referenced Mitigated Negative Declaration (MND) on September 7, 2010. As a state agency responsible for protecting water quality within the Lahontan Region and CEQA "responsible" agency, we have reviewed the information submitted and have the following additional comments.

General Comments

State law assigns responsibility for protection of water quality with the Lahontan Watershed Basin to the California Regional Water Quality Control Board, Lahontan Region (Water Board). The *Water Quality Control Plan for the Lahontan Region* (Basin Plan) contains policies that the Regional Board uses with other laws and regulations to protect water quality within the region, as noted on page 89 of the MND. These policies specifically include in Chapter 4.8 guidelines for land development (enclosed) applicable to the project that indicate, wherever possible, existing drainage patterns should not be significantly modified. On that basis, we encourage development of photovoltaic and other solar projects on previously disturbed land, rather than pristine desert, as is proposed here on former agricultural lands. We are concerned nonetheless by the proposed vegetation removal by grading and compaction of the upper 12 inches of soil (page 90) on large areas of the approximately 800-acre project site with multiple surface water drainage channels. We assert unless mitigation is incorporated these activities could significantly modify existing drainage patterns by increasing soil imperviousness and result in significant effects on downstream runoff and pollutant delivery and erosion processes. We recommend incorporating the Land Development guidelines 1 through 16 of Chapter 4.8 as conditions of project approval, in addition to any other applicable permit requirements.

Regulatory Requirements

If the project involves dredging, filling, or excavating in waters of the State, including waters of the U.S, pursuant to California Water Code (CWC) sections 13160 and 13260, the Project proponent must file with the Water Board a complete Clean Water Act Section 401

water quality certification (WQC) application for proposed discharges to waters of the U.S. or Report of Waste Discharge (ROWD) for proposed discharges to waters of the State. The WQC application or ROWD must fully describe the proposed discharge and be filed with the Water Board at least 140 days before the discharge occurs (CWC Section 13264). The *Application for Clean Water Act section 401 Water Quality Certification and/or Waste Discharge Requirements for Projects Involving Discharge of Dredged and/or Fill Material to Waters of the U.S. and/or Waters of the State* can be located on our website at http://www.waterboards.ca.gov/lahontan/water_issues/programs/clean_water_act_401/index.shtml. The application must include any environmental documents, technical reports, plans, diagrams, maps, mitigation and monitoring proposals, and other documents that characterize the discharge.

Please note, page 90 of the MND states that discharges greater than 0.2 acres, 400 linear feet, or 50 cubic yards are regulated in accordance with the Water Board's Order No. R6T-2003-0004. This information is inaccurate since these Regional General Waste Discharge Requirements (GWDRs) do not have any size requirement. The State Water Resources Control Board Order No. 2004-0004-DWQ, *Statewide General Waste Discharge Requirements for Dredged or Fill Discharges to Waters Deemed by the U.S. Army Corps of Engineers to Outside of Federal Jurisdiction*, do have the above size restrictions; i.e., discharges may be authorized under these Statewide GWDRs (Order No. 2004-0004-DWQ) provided the discharges are not greater than 0.2 acre and 400 linear feet of fill and excavation, and not more than 50 cubic yards of dredge material discharge.

Other Information

Please note that a revised Statewide Construction General Permit (CGP) has been reissued by the State Water Resources Control Board to replace Water Quality Order No. 99-08-DWQ, and became effective as of July 1, 2010. The new permit is Water Quality Order No. 2009-0009-DWQ. Information on the CGP can be obtained at: http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml.

If you have any questions, please contact Tobi Tyler at (530) 542-5435 or Ttyler@waterboards.ca.gov or Alan Miller at (530) 542-5430.

Alan Miller

Alan E. Miller, P.E.
Chief, North Basin Regulatory Unit

Enclosure: Basin Plan section 4.8, pages 1-2

TT/clhT: Alpine Solar PV comments 10-5-10 TT.doc
[File: Pending / Los Angeles County / Alpine Solar Project]

4.8 LAND DEVELOPMENT

The construction and maintenance of urban and commercial developments can impact water quality in many ways. Construction activities inherently disturb soil and vegetation, often resulting in accelerated erosion and sedimentation. Stormwater runoff from developed areas can also contain petroleum products, nutrients, and other contaminants.

This section contains a discussion of the potential water quality impacts expected to result from land development activities, followed by control measures to reduce or offset water quality impacts from such activities.

Construction Activities and Guidelines

Construction activities often produce erosion by disturbing the natural ground surface through scarifying, grading, and filling. Floodplain and wetland disturbances often reduce the ability of the natural environment to retain sediment and assimilate nutrients. Construction materials such as concrete, paints, petroleum products, and other chemicals can contaminate nearby water bodies. Construction impacts such as these are typically associated with subdivisions, commercial developments, and industrial developments.

Control Measures for Construction Activities

The Regional Board regulates the construction of subdivisions, commercial developments, industrial developments, and roadways based upon the level of threat to water quality. The Regional Board will request a Report of Waste Discharge and consider the issuance of an appropriate permit for any proposed project where water quality concerns are identified in the California Environmental Quality Act (CEQA) review process. Any construction activity whose land disturbance activities exceed five acres must also comply with the statewide general NPDES permit for stormwater discharges (see "Stormwater" section of this Chapter).

The following are guidelines for construction projects regulated by the Regional Board, particularly for projects located in portions of the Region where erosion and stormwater threaten sensitive watersheds. The Regional Board recommends that each county within the Region adopt a grading/erosion control ordinance to require implementation of these same guidelines for all soil disturbing activities:

1. Surplus or waste material should not be placed in drainageways or within the 100-year floodplain of any surface water.

2. All loose piles of soil, silt, clay, sand, debris, or other earthen materials should be protected in a reasonable manner to prevent any discharge to waters of the State.

3. Dewatering should be performed in a manner so as to prevent the discharge of earthen material from the site.

4. All disturbed areas should be stabilized by appropriate soil stabilization measures by October 15th of each year.

5. All work performed during the wet season of each year should be conducted in such a manner that the project can be winterized (all soils stabilized to prevent runoff) within 48 hours if necessary. The wet season typically extends from October 15th through May 1st in the higher elevations of the Lahontan Region. The season may be truncated in the desert areas of the Region.

6. Where possible, existing drainage patterns should not be significantly modified.

7. After completion of a construction project, all surplus or waste earthen material should be removed from the site and deposited in an approved disposal location.

8. Drainage swales disturbed by construction activities should be stabilized by appropriate soil stabilization measures to prevent erosion.

9. All non-construction areas should be protected by fencing or other means to prevent unnecessary disturbance.

10. During construction, temporary protected gravel dikes, protected earthen dikes, or sand bag dikes should be used as necessary to prevent discharge of earthen materials from the site during periods of precipitation or runoff.

11. Impervious areas should be constructed with infiltration trenches along the downgradient sides to dispose of all runoff greater than background levels of the undisturbed site. Infiltration trenches are not recommended in areas where infiltration poses a risk of ground water contamination.

12. Infiltration trenches or similar protection facilities should be constructed on the downgradient side of all structural drip lines.

13. Revegetated areas should be continually maintained in order to assure adequate growth and root development. Physical erosion control facilities should be placed on a routine maintenance and inspection program to provide continued erosion control integrity.

14. Waste drainage waters in excess of that which can be adequately retained on the property should be collected before such waters have a chance to degrade. Collected water shall be treated, if necessary, before discharge from the property.

15. Where construction activities involve the crossing and/or alteration of a stream channel, such activities should be timed to occur during the period in which stream flow is expected to be lowest for the year.

16. Use of materials other than potable water for dust control (i.e., reclaimed wastewater, chemicals such as magnesium chloride, etc.) is strongly encouraged but must have prior Regional Board approval before its use.

Specific Policy and Guidelines for Mammoth Lakes Area

To control erosion and drainage in the Mammoth Lakes watershed at an elevation above 7,000 feet (Figure 4.8-1), the following policy and guidelines apply:

Policy:

A Report of Waste Discharge is required not less than 90 days before the intended start of construction activities of a **new development** of either (a) six or more dwelling units, or (b) commercial developments involving soil disturbance on one-quarter acre or more.

The Report of Waste Discharge shall contain a description of, and time schedule for implementation, for both the **interim erosion control measures** to be applied during project construction, and **short- and long-term erosion control measures** to be employed after the construction phase of the project. The descriptions shall include appropriate engineering drawings, criteria, and design calculations.

Guidelines:

1. Drainage collection, retention, and infiltration facilities shall be constructed and maintained to prevent transport of the runoff from a 20-year, 1-hour design storm from the project site. A 20-year, 1-hour design storm for the Mammoth Lakes area is equal to 1.0 inch (2.5 cm) of rainfall.

2. Surplus or waste materials shall not be placed in drainageways or within the 100-year flood plain of surface waters.

3. All loose piles of soil, silt, clay, sand, debris, or earthen materials shall be protected in a reasonable manner to prevent any discharge to waters of the State.

4. Dewatering shall be done in a manner so as to prevent the discharge of earthen materials from the site.

5. All disturbed areas shall be stabilized by appropriate soil stabilization measures by October 15 of each year.

6. All work performed between October 15th and May 1st of each year shall be conducted in such a manner that the project can be winterized within 48 hours.

7. Where possible, existing drainage patterns shall not be significantly modified.

8. After completion of a construction project, all surplus or waste earthen material shall be removed from the site and deposited at a legal point of disposal.

9. Drainage swales disturbed by construction activities shall be stabilized by the addition of crushed rock or riprap, as necessary, or other appropriate stabilization methods.

10. All nonconstruction areas shall be protected by fencing or other means to prevent unnecessary disturbance.

11. During construction, temporary erosion control facilities (e.g., impermeable dikes, filter fences, hay bales, etc.) shall be used as necessary to prevent discharge of earthen materials from the site during periods of precipitation or runoff.

12. Revegetated areas shall be regularly and continually maintained in order to assure adequate growth and root development. Physical

COUNTY OF LOS ANGELES

FIRE DEPARTMENT

1320 NORTH EASTERN AVENUE
LOS ANGELES, CALIFORNIA 90063-3294

(323) 890-4330

P. MICHAEL FREEMAN
FIRE CHIEF
FORESTER & FIRE WARDEN

SEP 28 2010

September 20, 2010

Mr. Anthony Curzi
Department of Regional Planning
Impact Analysis Section
320 West Temple Street
Los Angeles, CA 90012

Dear Mr. Curzi:

INITAL STUDY, ALPINE SOLAR PROJECT, PROJECT NUMBER #R2009-02089, CASES RCUPT200900158, RENVT200900128, BETWEEN AVENUE B AND C AND 210TH AND 220TH STREET WEST, LANCASTER (FFER 201000172)

The Initial Study has been reviewed by the Planning Division, Land Development Unit, Forestry Division, and Health Hazardous Materials Division of the County of Los Angeles Fire Department. The following are their comments:

PLANNING DIVISION:

1. We have no comments at this time.

LAND DEVELOPMENT UNIT:

1. The development of this project must comply with all applicable code and ordinance requirements for construction, access, water main, fire flow and fire hydrants.

2. Specific fire and life safety requirements for the construction phase will be addressed at the building fire plan check. Additional fire and life safety requirements may be applicable during this period.

3. Every building constructed shall be accessible to Fire Department apparatus by way of access roadways, with an all-weather surface of not less than the prescribed width. The roadway shall be extended to within 150 feet of all portions of the exterior walls when measured by an unobstructed route around the exterior of the building.

4. Access roads shall be maintained with a minimum of 10 feet of brush clearance on each side. Fire access roads shall have an unobstructed vertical clearance clear-to-sky with the exception of protected tree species. Protected tree species overhanging fire access roads shall be maintained to provide a vertical clearance of 13 feet 6 inches.

5. Fire sprinkler systems are required in most commercial occupancies. For those occupancies not requiring fire sprinkler systems, it is strongly suggested that fire sprinkler systems be installed. This will reduce potential fire and life losses.

6. Turning radii shall not be less than 32 feet. This measurement shall be determined at the centerline of the road. A Fire Department approved turning area shall be provided for all driveways exceeding 150 feet in length and at the end of all cul-de-sacs.

7. All on-site driveways shall provide a minimum unobstructed width of 28 feet, clear to sky. The on-site driveway is to be within 150 feet of all portions of the exterior walls of the first story of any building. The centerline of the access driveway shall be located parallel to, and within 30 feet of an exterior wall on one side of the proposed structure.

8. All access devices and gates shall meet the following requirements:

   a. Any single gated opening used for ingress and egress shall be a minimum of 26 feet in width, clear-to-sky.

   b. Any divided gate opening (when each gate is used for a single direction of travel i.e., ingress or egress) shall be a minimum width of 20 feet clear-to-sky.

   c. Gates and/or control devices shall be positioned a minimum of 50 feet from a public right-of-way, and shall be provided with a turnaround having a minimum of 32 feet of turning radius. If an intercom system is used, the 50 feet shall be measured from the right-of-way to the intercom control device.

   d. All limited access devices shall be of an approved type and comply with Regulation #5.

   e. Gate plans shall be submitted to the Fire Department, prior to installation. These plans shall show all locations, widths and details of the proposed gates.

9. The County of Los Angeles Fire Department, Land Development Unit comments are only general requirements. Specific fire and life safety requirements will be addressed at the building and fire plan check phase. Additional requirements may be applicable during this period.

10. The statutory responsibilities of the County of Los Angeles Fire Department, Land Development Unit are the review of all projects within the unincorporated areas of the County of Los Angeles. Our emphasis is on the availability of sufficient water supplies for fire fighting operations, fire apparatus access and local/regional access issues.

However, we review all projects for issues that may have a significant impact on the County of Los Angeles Fire Department.

We are also responsible for the review of all projects within contract cities. These are incorporated cities that contract with the County of Los Angeles Fire Department for fire protection services. We are responsible for all County facilities, located within non-contract cities. The County of Los Angeles Fire Department, Land Development Unit may also comment on conditions that may be imposed on a project by the Fire Prevention Division which may create a potentially significant impact to the environment.

11. This project shall comply with the County of Los Angeles Fire Department Regulation #27 which is titled, "Requirements for Building Construction and Land Development use within or Adjacent to High Voltage Transmission Lines."

12. This project shall comply with all applicable brush clearance and vegetation management requirements of the County of Los Angeles Fire Department. A Vegetation Management plan shall be submitted and approved by the Fire Department, Land Development Unit prior to clearance for a public hearing.

13. Should any questions arise regarding subdivision, water systems or access, please contact the County of Los Angeles Fire Department, Land Development, Inspector Scott Jaeggi at (323) 890-4243.

FORESTRY DIVISION – OTHER ENVIRONMENTAL CONCERNS:

1. The statutory responsibilities of the County of Los Angeles Fire Department, Forestry Division includes erosion control, watershed management, rare and endangered species, vegetation, fuel modification for Very High Fire Hazard Severity Zones or Fire Zone 4, archeological and cultural resources, and the County Oak Tree Ordinance. Potential impacts in these areas should be addressed in the final environmental document.

HEALTH HAZARDOUS MATERIALS DIVISION:

1. The "Initial Study" indicates that the site is zoned for heavy agriculture, which typically involves application of chemical fertilizers and pesticides to the ground. The application of agricultural chemicals throughout the years may have contributed to potential onsite residual soil toxicity. There are also onsite structures, groundwater production wells, potential "trash" dumps, an electrical substation, and other disturbed areas. These occupied/disturbed areas and the shallow agricultural soils should be further assessed for potential environmental impacts. Based on the results of environmental assessments, a decision should be made if any further site assessment/soil mitigation or, at a minimum, soil management is required. If significant soil contamination is identified, the onsite contamination should be mitigated or managed under the oversight of a local or state agency.

If you have any additional questions, please contact this office at (323) 890-4330.

Very truly yours,

JOHN R. TODD, CHIEF, FORESTRY DIVISION
PREVENTION SERVICES BUREAU

JRT:ss

PALMDALE

a place to call home

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September 29, 2010

Mr. Anthony Curzi
Impact Analysis Section
Los Angeles County Department of Regional Planning
320 West Temple Street
Los Angeles, CA 90012

RE: Notice of Consultation for the Alpine Solar Project; A 92 MW Solar Photovoltaic Facility on 580 Acres of an 800 Acre Site Located Between Avenue B and Avenue C, 210th Street West and 220th Street West (County Project No. R2009-02089

Dear Mr. Curzi:

Thank you for the opportunity to review and reply to your Notice of Consultation. The Planning Department staff has reviewed the documents, including the Initial Study and attached maps. At this time, the City of Palmdale has no comment on the proposed project.

If you have any questions regarding this matter, please contact Susan Koleda or me at (661) 276-5200.

Sincerely,

Richard Kite
Assistant Director of Planning

RK:sk

Auxiliary aids provided for communication accessibility upon 72 hours' notice and request.

OCT - 4 2010

COUNTY OF LOS ANGELES
DEPARTMENT OF PARKS AND RECREATION
"Creating Community Through People, Parks and Programs"
Russ Guiney, Director

September 30, 2010 Sent via email: acurzi@planning.lacounty.gov

TO: Anthony Curzi
Department of Regional Planning
Impact Analysis Section

FROM: Joan A. Rupert Julie Yom for Joan Rupert
Department of Parks and Recreation
Environmental & Regulatory Permitting Section

SUBJECT: **DRAFT INITIAL STUDY/ MITIGATED NEGATIVE DECLARATION (MND)**
ALPINE SOLAR PROJECT
PROJECT NO. R2009-02089
CONDITIONAL USE PERMIT NO. RCUPT200900158
ENVIRONMENTAL NO. RENVT200900024

The Department of Parks and Recreation has reviewed the Draft MND for the proposed project for potential impact on the facilities of this Department. We have determined that the proposed project will not affect any Departmental facilities.

However, please note a property (APN 3256-016-900) under the jurisdiction of this Department is located adjacent to the proposed gen-tie route. Though this property was acquired for the purpose of a park development, we do not foresee any impacts to the property from the proposed project because there are no current plans to develop the site.

Thank you for including this Department in the review process. If we may be of further assistance, please contact Ms. Julie Yom at (213) 351-5127 or jyom@parks.lacounty.gov.

JR:JY:tls/response Draft MND Alpine Solar Project

c: Parks and Recreation (N. E. Garcia, L. Hensley, J. Barber, M. Long, J. Yom)

COUNTY OF LOS ANGELES
Public Health

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Fifth District

September 30, 2010

TO: Anthony Curzi
Impact Analysis Section
Department of Regional Planning

FROM: Ken Habaradas, M.S., REHS
Bureau of Environmental Protection
Department of Environmental Health

SUBJECT: PROJECT NO. 2009-02089, RCUPT 200900158, RENVT 200900128 INITIAL STUDY/MITIGATED NEGATIVE DECLARATION FOR THE ALPINE SOLAR PROJECT

The Department of Public Health – Environmental Health Division (Environmental Health) has reviewed the Initial Study for the proposed Alpine Solar Project. The project includes the construction of a 92-megawatt solar photovoltaic energy facility on approximately 580 acres of the 800-acres site. Based on review of the information provided, we offer the following comments:

Land Use Program - Wastewater Disposal

1. A feasibility study will be required to demonstrate that an onsite wastewater treatment system (OWTS) in compliance with the Los Angeles County Plumbing and Health Code can be constructed on the project site. The feasibility study shall be prepared in accordance with Environmental Health's Onsite Wastewater Treatment System (OWTS) Guidelines. The proposed OWTS shall maintain all required setbacks from any wells and surface water bodies, such as streams, floodplains, drainage courses, etc.

2. The project applicant shall contact the Regional Water Quality Control Board regarding Waste Discharge Requirements (WDR) for the commercial discharge of wastewater.

For questions regarding the OWTS requirements, please contact Patrick Nejadian at (626) 430-5390.

Drinking Water Program – Water Supply

1. The Project will be required to comply with Environmental Health's Potable Water Availability Requirements for Residential and Commercial Development. The project applicant will be required to demonstrate the availability of an adequate, sustainable supply of drinking water from an approved source to the satisfaction of Environmental Health.

2. The construction of any new water well will require a permit and approval from Environmental Health's Drinking Water Program. The construction of wells must meet the requirements of the Title 11 of the Los Angeles County Code and applicable state regulations. Wells must also meet the requirements of Environmental Health with respect to quantity and quality.

3. If the project plans to use water from existing on-site water wells, the applicant will be required to submit to Environmental Health for review and approval any documentation or approvals relating to the existing on-site water wells. Environmental Health will not approve the use of existing wells for domestic purposes unless the wells have been brought into compliance with the California Well Standards and standards of Environmental Health.

For questions regarding potable water requirements, please contact Tom Parys or Richard Lavin at (626) 430-5420.

If you have any other questions or need additional information, please contact me at (626) 430-5262.

KH:kh