TULARE COUNTY RESOURCES MANAGEMENT AGENCY
5961 SOUTH MOONEY BLVD
VISALIA, CA 93277

Tulare Solar Project

Draft Environmental Impact Report
Technical Appendices

October 2013

Prepared by:

Resource Management Agency

EST. 1968 PROVOST & PRITCHARD CONSULTING GROUP
An Employee Owned Company

146512V1 ENV
PSP 11-062

Appendix A

Notice of Preparation

NOTICE OF PREPARATION

To:	State Clearinghouse PO Box 3044/ 1400 Tenth St Sacramento CA 95814	From:	County of Tulare – RMA 5961 S Mooney Blvd Visalia CA 93277

Date: February 14, 2013

Subject: **Notice of Preparation of a Draft Environmental Impact Report**

Project Title: Tulare Solar Center, County of Tulare, California

Project Applicant: Tulare Solar Center, LLC

Project Location: The proposed Project site is located in the unincorporated area of southwestern Tulare County. (See Attachment A, Figure 1). The approximate 1,142 acre proposed Project site is located along State Highway 65, between Avenue 24 and Avenue 12, approximately 3.5 miles north of Highway 155, and encompasses Assessor Parcel Numbers (APNs) 339-100-007, 339-110-006, 339-110-010, 339-110-016, 339-140-001, 339-140-008, and 339-140-010. The proposed Project is in the Public Land Survey System of Sections 21, 22, 23, 27 and 28, Township 24 South, Range 27 East, M. D. B & M and can be found within the Richgrove United States Geological Survey (USGS) 7.5 minute topographic quadrangle.

Tulare County Resource Management Agency (RMA) will be the Lead Agency and will prepare an environmental impact report of the project identified below. We need to know the views of your agency as to the scope and content of the environmental information, which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will use the EIR prepared by our agency when considering your permit or other approval for the project.

The project description, location, and the potential environmental effects are contained in the attached materials.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but not later than 30 days after receipt of this notice.

A scoping meeting is scheduled for **Thursday March 7, 2013 at 1:30 p.m.** in the RMA Main Conference Room, located at 5961 So. Mooney Blvd., Visalia, CA

Please direct your response to Hector Guerra, Chief Environmental Planner at the address shown above. He may be contacted by e-mail at hguerra@co.tulare.ca.us or by telephone at 559-624-7121.

Please provide us with the name of a contact person in your agency.

Date	2/13/14	Signature	
		Title	Chief Environmental Planner
Date	2-13-14	Signature	
		Title	Director, Planning Environmental Assessment Officer

Reference: California Code of Regulations, Title 14, (CEQA Guidelines) Sections 15082(a), 15103, 15375.

Project Description:

The proposed Project is intended to provide low-emission, solar powered renewable energy to the California Grid to assist with meeting local energy demands, State Renewable Portfolio Standard, and Assembly Bill (AB) 32 mandates. The Project would be electrically connected to the California Independent System Operator (CAISO) controlled grid, and would provide approximately 80 MW of renewable power to be sold to one of the State's Investor Owned Utilities (IOUs), a municipality, or a CAISO market participant.

Maps are provided in Attachment "A."

Locations:

The Tulare Solar Center Project (proposed Project) (PSP 11-062) is located in southwestern Tulare County, California, approximately 257 miles southeast of Sacramento and 34 miles north of Bakersfield. The City of Delano is approximately 16 miles to the southwest, while the Town of Ducor is approximately four miles to the north of the proposed Project site (Attachment A, Figure 1). The approximate 1,142.23 acre proposed Project site is located along State Highway 65, between Avenue 24 and Avenue 12, approximately 3.5 miles north of Highway 155, and encompasses Assessor Parcel Numbers (APNs) 339-100-07, 339-110-06, 339-110-10, 339-110-016, 339-140-01, 339-140-08 and 339-140-10 (Figure 2). The proposed Project is in the Public Land Survey System of Sections 21, 22, 23, 27, and 28, Township 24 South, Range 27 East, M. D. B & M and can be found within the Richgrove United States Geological Survey (USGS) 7.5 minute topographic quadrangle.

Latitude: N 35° 50' 03.03"
Longitude: W 119° 03' 13.17"

Surrounding land uses and setting:

The proposed Project site (See Attachment A, Figure 2) is at an elevation of approximately 585 to 600 feet above mean sea level and has historically been used for dry-land (un-irrigated) crop production on a bi-annual cycle, i.e., small grains harvested once every two years, with soil amending activities conducted during periods in-between crop production. The site is mapped by the Department of Conservation, Farmland Mapping and Monitoring Program (FMMP) as Farmland of Local Importance (See Attachment A, Figure 4).

The proposed Project site is currently under Williamson Act Contracts, as are the majority of surrounding farmlands (See Attachment A, Figure 4). All Williamson Act Contract options will be analyzed as part of the environmental document. There is a farm house, shop, storage building and related servicing utilities located on a portion of the site. Porterville Highway (State Route 65) bi-sects the proposed Project site, while an aggregate paved County road aligns Avenue 24,.to the northern portion of the site. Avenue 12 is located adjacent to the majority of the site's southern boundary, while an unpaved rural roadway traverses the site along portions of its eastern boundary. The proposed Project site may be accessed via either Avenue 24 or Avenue 12, to the north and south of the site. Existing Southern California Edison (SCE) transmission line lies adjacent to the Project site's northern boundary along Avenue 24. This transmission line also traverses the middle portion of the proposed Project site in a north-south orientation along Road 240.

Surrounding land is predominantly Farmland of Local Importance, though areas classified as Farmland of Statewide Importance abut the proposed Project site to the north and west. Surrounding land uses primarily consist of an agricultural mixture of orchards, pasture, and small grain dry land (See Attachment A, Figure 4). Ponds used primarily for farming purposes are located at approximate distances between 0.25 miles to 11 miles to the east and west of the site.

Zoning and Land Use:

The Project site is zoned Exclusive Agriculture – 40 Acre Minimum (AE-40), (See Attachment A, Figure 5) and is designated as Rural Valley Lands by the County of Tulare General Plan. The Project site contains the appropriate

zoning and land use designations, therefore, neither re-zoning nor a General Plan Amendment are necessary. The Project will, however, require approval of a special use permit (PSP 11-062) from the Tulare County Planning Commission.

Potential Environmental Impacts:

It is anticipated that potential environmental impacts which may occur include: Aesthetics, Biological Resources, Greenhouse Gas Emissions, Land Use/Planning, Transportation/Traffic, Agriculture Resources, Cultural Resources, Hazards & Hazardous Materials, Utilities/Service Systems, Air and Noise Quality, and Mandatory Findings of significance.

Reviewing Agencies

Regional, State and Federal:

- California Department of Conservation – Division of Land Resource Protection
- California Department of Fish and Wildlife Services - Region #4
- Central Valley Regional Water Quality Control Board – Region #5
- San Joaquin Valley Air Pollution Control District
- U.S. Fish & Wildlife Services
- Southern California Edison
- Caltrans District 06
- California Energy Commission
- California Public Utilities Commission

Local:

- Tulare County Resource Management Agency:
- Tulare County Environmental Health and Human Services Agency
- Tulare County Flood Control
- Tulare County Fire
- Planning Branch (Environmental Planning, Project Review, Building and Housing Divisions)
- Public Works Branch

Maps

See Attachment "A" for vicinity and project site maps.

ATTACHMENT "A":
Figure 1 – Regional Setting

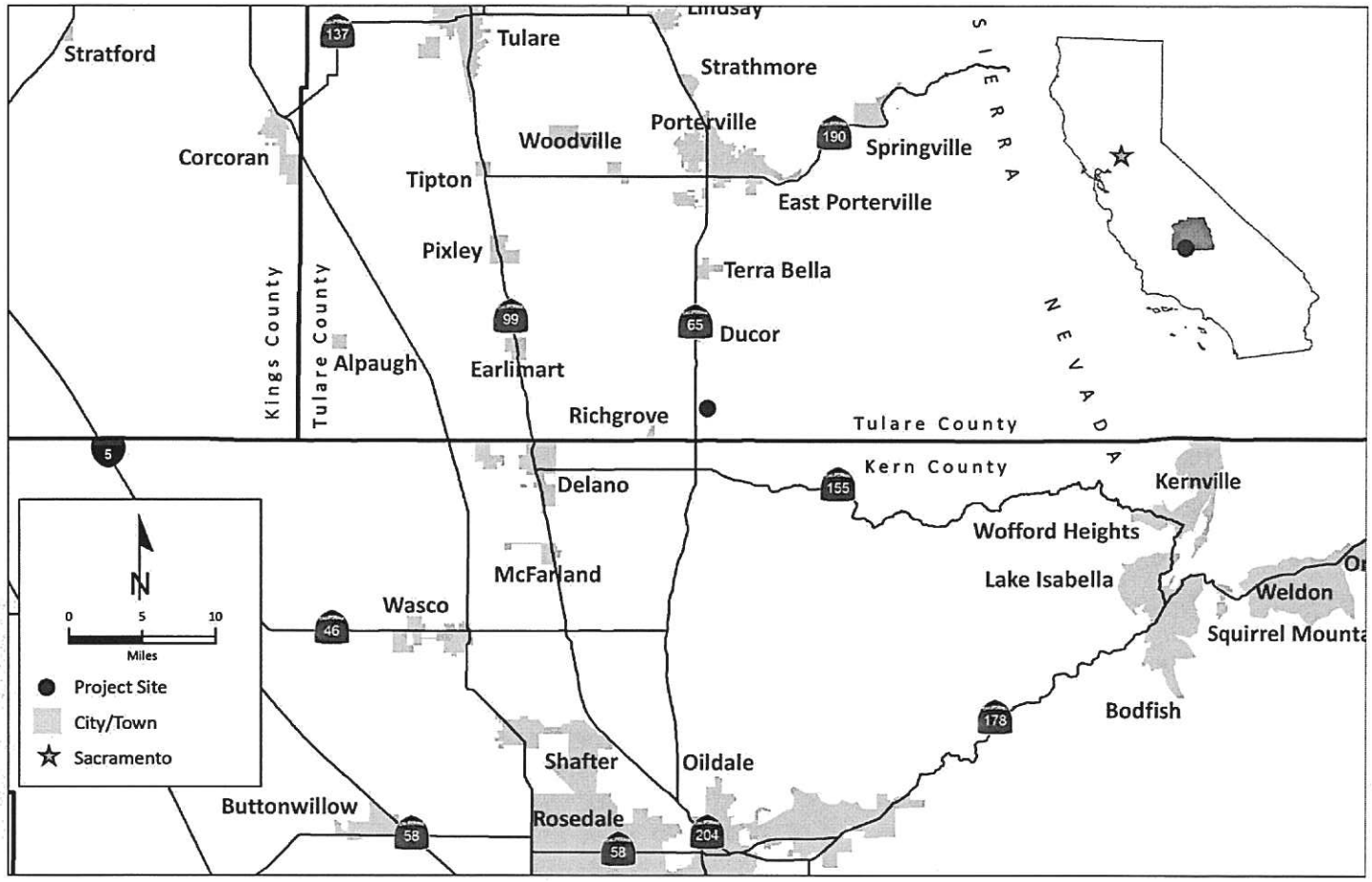


Figure 2 – Project Aerial

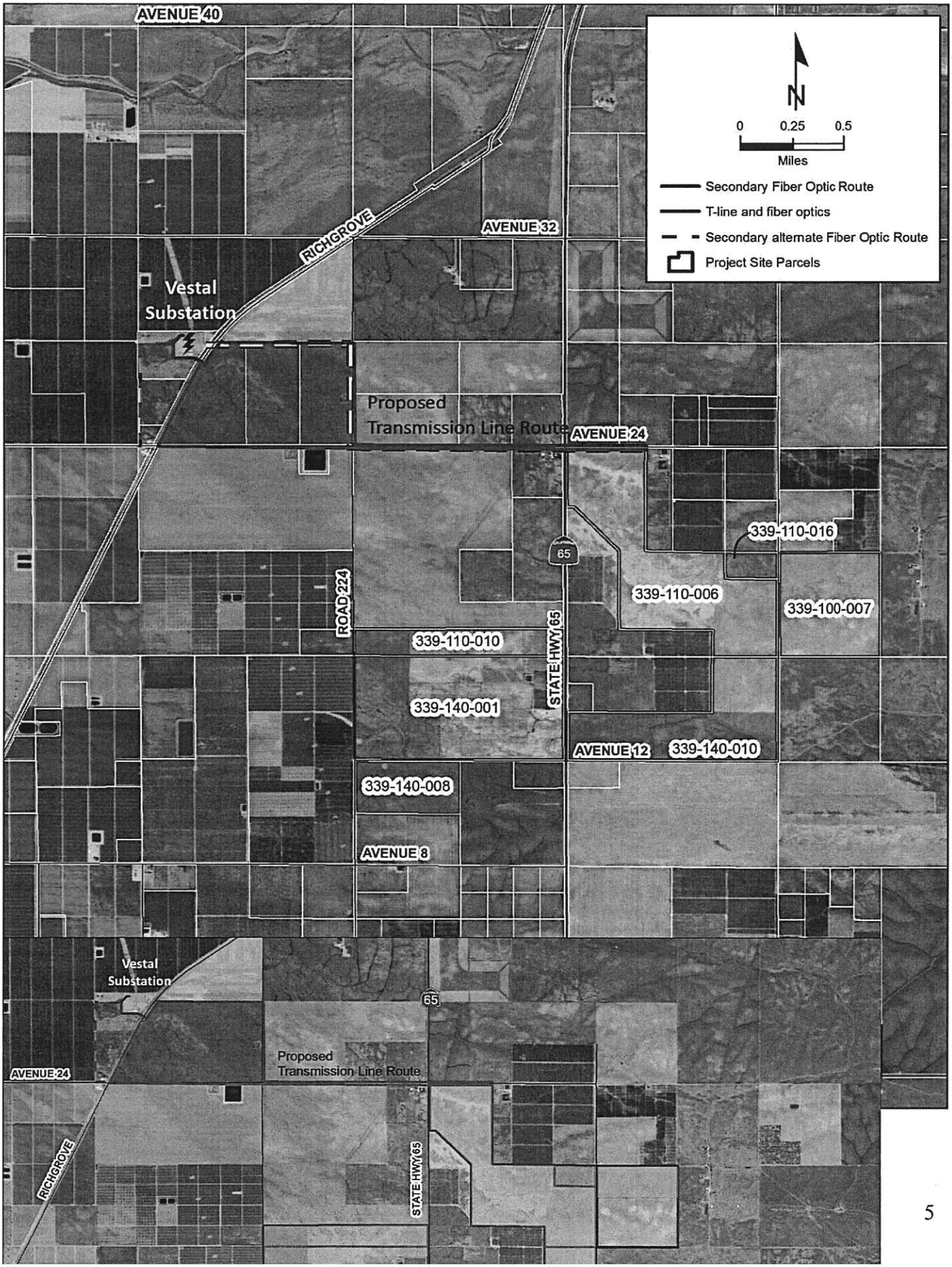


Figure 4 - Farmland

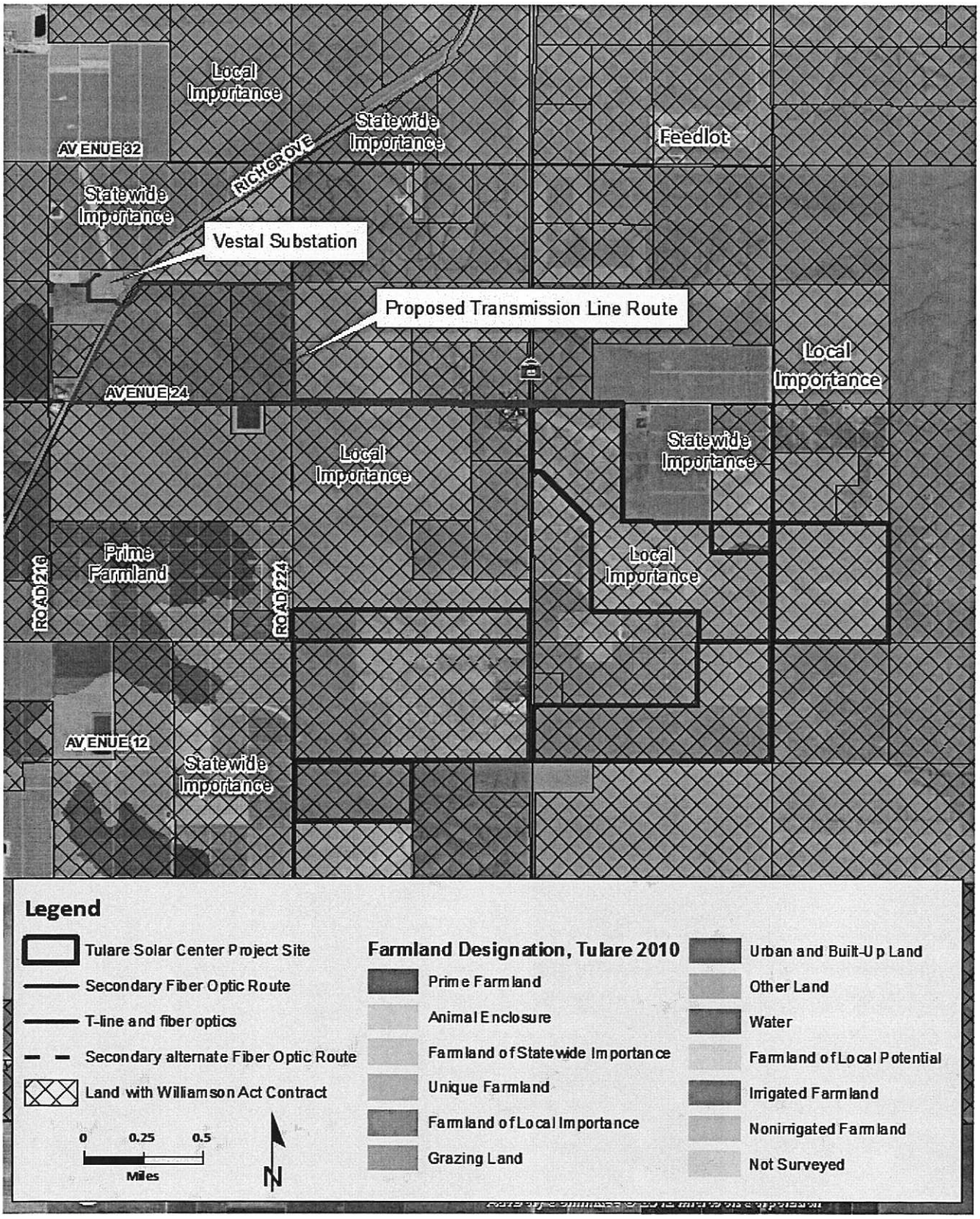
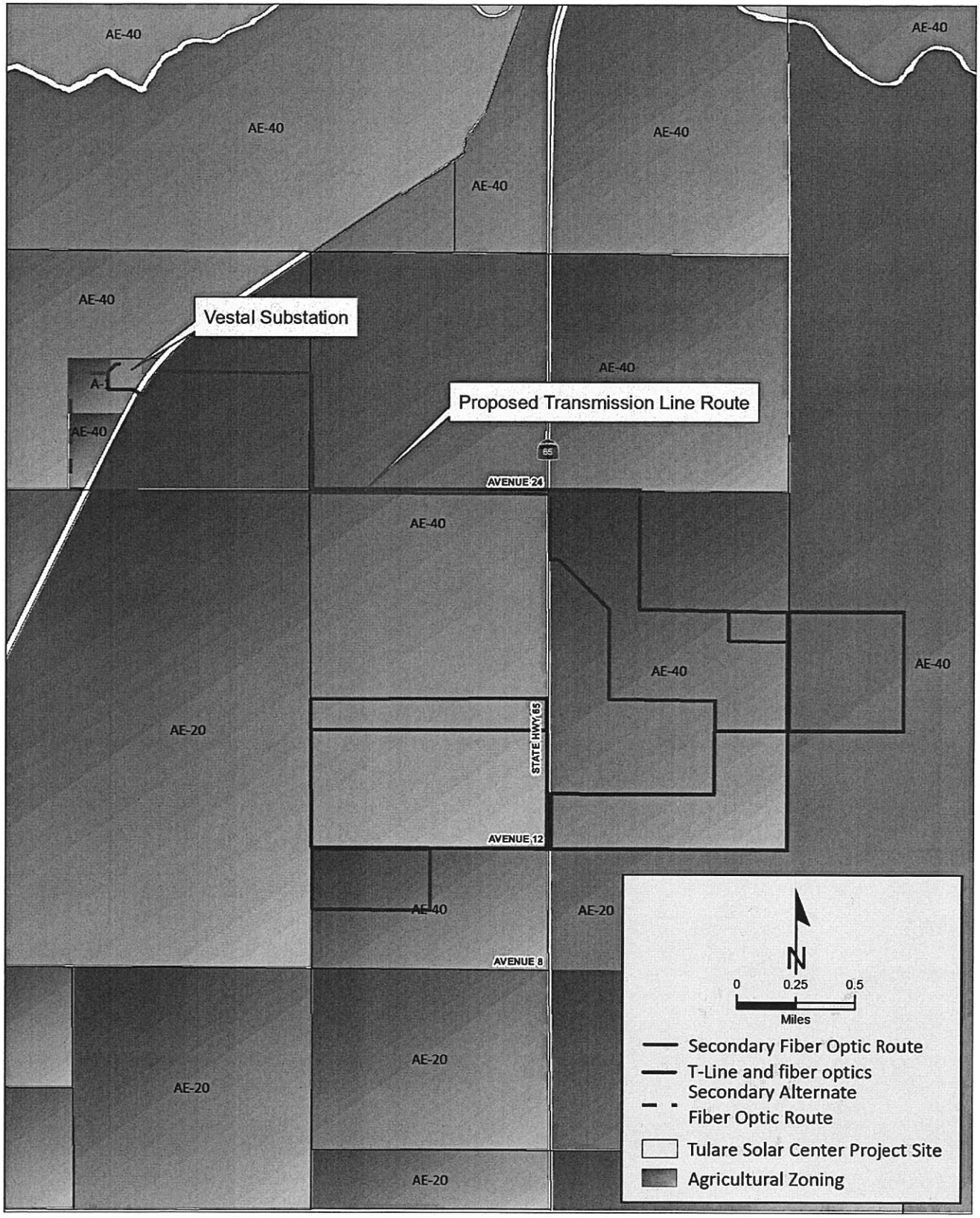


Figure 5 – Zoning



RESOURCE MANAGEMENT AGENCY

5961 SOUTH MOONEY BLVD
VISALIA, CA. 93277
PHONE (559) 624-7000
FAX (559) 730-2653

Michael C. Spata — Planning
Britt L. Fussel — Public Works
Roger Hunt — Administration/Community Development

JAKE RAPER JR., AICP, DIRECTOR

DATE: June 7, 2012

PROJECT REVIEW - CONSULTATION NOTICE

To: Interested Agencies (see next page)
From: Scott Cochran, Planner III
Subject: Case No. PSP 11-062 (Tulare Solar Center/Wellhead Services, Inc.) **Revised Site Plan**
Location APN(s) 339-100-007, 339-110-006, 110 & 016, 339-140-001, 008, 010

The Tulare County Resource Management Agency, Planning Branch, has received a **revised site plan** for the above referenced project. A copy of the revised site plan is attached for your information and review.

The original site plan and application package was previously forwarded for consultation on December 14, 2011. Please review the **revised proposal** and provide any comments and/or recommendations that you feel are appropriate including any scientific or factual information that would be useful in our evaluation. The following information checked below is also applicable for your consideration regarding this project:

X (a) Please indicate in your response whether this department should prepare a Negative Declaration or Environmental Impact Report (EIR). In the event an EIR is prepared, I will be in further contact with you as to the scope and content of the environmental information pertinent to your agency's statutory responsibilities. Note that Public Resources Code Section 21080(c) requires substantial evidence in the record to show a significant effect on the environment. Any recommendation for preparation of an EIR requires submittal of such evidence with your comments. If there is no such evidence, a Negative Declaration may be prepared. Recommendations or suggestions for changes or mitigation measures requested by agencies having jurisdiction by law over natural resources affected by the project must be accompanied by a proposed reporting or monitoring program for those changes or measures in accordance with Public Resources Code Section 21081.6.

___ (b) The Tulare County Guidelines for Implementing the California Environmental Quality Act (CEQA), indicate this project to be Categorically Exempt and therefore, the preparation of an environmental document is not necessary. However, if your organization has substantial evidence that would indicate to the contrary, please explain.

To all local agencies wishing to make recommendations, California Department of Transportation, California Department of Water Resources, elementary schools, high schools or unified school districts - all comments must be received by our office within 15 days of receipt by your office (**by June 30, 2012**), in order to be considered during the review process (Pursuant to Government Code Sections 66453, 66455 and 66455.7 as amended effective January 1, 1995.) All other agencies have until **June 30, 2012** to submit their recommendations. **Should you have no comments or recommendations, please respond with "no comment."**

Special Notice to Agencies: Notice of a public hearing for this project will be mailed at least ten (10) days prior to the hearing. If your agency will be significantly affected by this project with respect to your ability to provide essential facilities and/or services, and you wish to receive notice of the public hearing, please state this in your response.

Our office appreciates your time and assistance with this project review. Please direct all correspondence to the Project Planner and Case Number referenced above for this project.

CASE NO. PSP 11-062 Tulare Solar Center, LLC (Revised Proposal)
CONSULTING AGENCY LIST

TULARE COUNTY AGENCIES

___ Airport Land Use Commission
X **H.H.S.A. - Environmental Health Services Division** ✓
___ H.H.S.A. - HazMat Division
___ R.M.A. - Building Division
___ R.M.A. - Building Services Division
___ R.M.A. – Community Dev./Code Compliance Division
R.M.A. - Community Dev./Redevelopment Division
X **R.M.A. – Engineering-Flood Control/Permits Division** ✓
___ R.M.A. – Engineering-Solid Waste Division
___ R.M.A. - General Services Division
___ R.M.A. – Parks and Recreation Division
___ R.M.A. – Planning-Countywide Division
___ R.M.A. - Transportation/Utilities Division
___ Sheriff's Department - Visalia Headquarters
___ Sheriff's Department -Orosi Substation
___ Sheriff's Department -Pixley Substation
___ Sheriff's Department -Porterville Substation
___ Sheriff's Department-Traver Substation
X **Supervisor Mike Ennis, District 5** ✓ Small map
X **Tulare Co. Agricultural Commissioner** ✓
X **Tulare Co. Assessor** ✓
X **Tulare Co. Fire Department (2 copies)** ✓ 1 big map
___ Tulare Co. Education Department
___ _____.

LOCAL AGENCIES

___ _____ Irrigation Dist*
___ _____ Pub Utility Dist*
___ _____*
___ Levee Dist. No 1*
___ Levee Dist. No 2*
___ _____ Town Council*
___ _____ Elem. School Dist*
___ _____ School Dist*
___ City of _____*
___ County of _____*

___ Tulare Lake Basin Water Storage Dist*
___ _____ Advisory Council*

___ _____ Fire District*
___ _____ Mosquito Abatement*
___ Kaweah Delta Water Cons. District*
X **SJV Air Pollution Control Dist** ✓
___ _____*

FEDERAL AGENCIES

___ Army Corps of Engineers
___ Fish & Wildlife
___ Bureau of Land Management
___ Natural Resources Conservation Dist.
___ Forest Service
___ National Park Service
___ _____.

STATE AGENCIES

___ Office of Historic Preservation
X **Dept. of Conservation** ✓ Small
___ State Clearinghouse (15 copies)
X **Dept. of Fish & Game Dist 4** ✓ small
X **Caltrans Dist. 6*** ✓
___ _____, DFG Area Biologist
___ Housing & Community Development
___ Reclamation Board
X **Public Utilities Commission** ✓
___ Dept. of Water Resources*
X **Regional Water Quality Control Board - Dist. 5** ✓ Small
___ Alcoholic Beverage Control
___ Water Resources Control Board*
___ Dept. of Food & Agriculture
___ State Lands Commission
___ State Treasury Dept. - Office of Permits Assist.
___ _____.
___ State Department of Health
___ U.C. Cooperative Extension

___ Audubon Society - Condor Research

OTHER AGENCIES

___ Native American Heritage Commission
___ District Archaeologist (Bakersfield)
___ TCAG (Tulare Co. Assoc. of Govts)
___ LAFCo (Local Agency Formation Comm.)
___ Pacific Bell (2 copies)
___ GTE (General Telephone) (2 copies)
___ P.G. & E. (2 copies)
X **Edison International (2 copies)** ✓
___ The Gas Company (2 copies)
X **Tulare County Farm Bureau** ✓
___ Archaeological Conservancy (Sacramento)
___ _____.

X **Kate Kelly, Kelly Group, P.O. Box 868, Winters, CA 95694** ✓

X **Dayne Frary, P.G., Associate Oil and Gas Engineer, CEQA Program, California Division of Oil, Gas, and Geothermal Resources, 4800 Stockdale Highway, Suite 417, Bakersfield, CA 93309** ✓

1.0 PURPOSE OF SPECIAL USE PERMIT APPLICATION

Tulare Solar Center, a project being developed by Wellhead Renewable Energy, LLC (WRE) is proposing to construct, own, and operate a solar photovoltaic generating facility (the Project) on a multi-parcel site totaling approximately 1,144 acresnear the community of Ducor in unincorporated Tulare County, California. The Project will be electrically connected to the California Independent System Operator (CAISO)-controlled grid, with its electricity sold to one of the State's Investor Owned Utilities (IOUs), a municipality, or a CAISO market participant.

2.0 PROJECT APPLICANT CONTACT INFORMATION

The following information should be used when contacting the project applicant or agent:

Applicant:	Tulare Solar Center, LLC 650 Bercut Drive, Suite C Sacramento, CA 95811
Property Owner 1:	Si Paul & Mary Louise Changala Living Trust P.O. Box 126 Ducor, CA 93218 (559) 534-2230
Property Owner 2:	Trilogy Limited, LP 550 Hartz Avenue, Suite 200 Danville, CA 94526 (925) 855-9408
Agent:	Wellhead Renewable Energy, LLC 650 Bercut Drive, Suite C Sacramento, CA 95811 Phone: (916) 447-5171 Attn: Gary Franzen, gfranzen@wellhead.com

3.0 SITE DESCRIPTION

The Tulare Solar Center(the "Project") will be located on historically disturbed agricultural lands in an unincorporated area of Tulare County, California as shown on the vicinity map and site plan. The project site is located along Highway 65, approximately 3.5 miles north of Highway 155(in Kern County, and also known as Garces Highway) or 4 miles south of Ducor. Porterville Highway (State Route 65)bisectsthe Project Site in the north to south direction. The site comprises sevenparcels, APNs 339-100-07, 339-110-006, 339-110-10, 339-110-16, 339-140-01, 339-140-08, and 339-140-010, which are all zoned Exclusive Agricultural (AE-40) and aredesignated Rural Valley Lands under the Tulare County General Plan. The project is consistent with Section 16 of Ordinance 352, as amended, allowing solar PV electric generating facilities within agricultural zoned lands, subject to a Special Use Permit and Developer Agreement.

The Project site consists of undeveloped land that is zoned for agriculture, and is primarily designated as Farmland of Local Importance by the California Farmland Mapping and Monitoring Program (FMMP), with the exception of one 20-acre parcel which has a Lands of Statewide Importance designation. All

The site topography ranges from flat to gently sloped, and although APN 339-140-01 contains site improvements, including a farm house, a shop, a storage building, and related servicing utilities, the Project will not impact these improved areas. Rural unpaved roads run adjacent to southern, western and eastern portions of the Project Site. A paved highway (Porterville Highway or State Route 65) bisects the site at the Site's east-west mid-point, a graveled county road (Avenue 24) runs adjacent to the northern portion, and an unpaved road (Avenue 12) runs adjacent to the majority of the site's southern boundary. The site is bordered by undeveloped lands and agricultural fields.

Photographs of the site are attached as Exhibit 1. Legal descriptions for the site's parcels are attached as Exhibit 2.

4.0 SITE SELECTION

The applicant has considered the following criteria in selecting the project site:

- Land Availability: The project site is suitable for the proposed project and consists of approximately 1,144.23 acres.

- General Plan and Zoning Designations: The project would be developed on agriculture land zoned AE-40 that lacks irrigation, and is allowed subject to the approval of a Special Use Permit and Developer Agreement.

- Lack of Environmental Constraints: The Project site does not contain any sensitive natural resources and the proposed project would be constructed on previously disturbed, but now fallow, agricultural land.

- Minimize Supporting Infrastructure Needs: The proposed project site is located in close proximity to existing electric transmission system infrastructure thereby minimizing the need to construct costly and potentially environmentally significant transmission facilities.

- Ideal Renewable Resource Location: The proposed project is located in a relatively isolated rural area with good solar radiation/insolation characteristics, including absence of shadowing features.

- Productive but Non-Invasive Land Use: The proposed project site lacks irrigation water and - prime soils, which historically has resulted in suboptimal/economically unproductive and sporadic dry-farming; the proposed project would assist the State in meeting renewable portfolio standards on property that is not being put to the highest and best use.

5.0 PROJECT DESCRIPTION

5.1 Project Overview

The proposed Project is a solar photovoltaic (PV) generating facility comprised of solar modules, inverters, access roads, and electrical equipment. The Project will also include an onsite substation(s), overhead subtransmission and communications lines, underground electrical facilities, and a control-equipment enclosure/operations and maintenance (O&M) building that will include space for several uses, including control equipment housing, shop space, and spare parts storage, with future uses to potentially include a worker break area and restroom. The clean, renewable energy produced by the Project would be sold to a public utility company, a municipality, or a CAISO market participant, and ultimately distributed for public consumption.

Multiple site plan drawings have been included in the attached drawing-set to illustrate alternative layouts that might be used upon completion of final engineering design. The multiple layouts allow a "greatest impacts" analysis to be conducted for the environmental review, with the final design to utilize one out of the three alternatives, or a hybrid variation as determined appropriate by planning and engineering constraints.

5.2 Major Project Components

Construction of the Project generally requires a focus in three major areas. The areas of focus include: (1) the solar field with associated equipment, including solar PV panels/modules, racking systems (which may or may not include tracking devices), inverters, intermediate voltage transformers, access roads, and underground, above-ground, or overhead electrical systems to collect and consolidate power from across the project, (2) a substation that receives the solar field's electrical production and increases the voltage to match the voltage of the adjacent utility grid via a generator step-up transformer, and (3) any other electrical interconnection components necessary for the Project's production to reach the utility grid, including disconnect equipment, communications lines (e.g. fiber optics) and a subtransmission tap line.

The Project perimeter will be secured by an 8-foot-high, chain-link perimeter fence, potentially topped with barbed wire for added security. Access to the Project will be gained through several normally locked gates. If the site location is determined to be in a San Joaquin Kit Fox habitat area, the perimeter fencing will be designed and installed for species accommodation as has been required of other solar PV projects in similar settings in the County.

5.2.1 Photovoltaic Modules

Manufacture of the PV modules (or panels) will be completed offsite at the original equipment manufacturer's (OEM's) location, and transported to the Project site. Although selection of the module OEM has not been finalized, the general characteristics of the PV modules are that they will be covered with dark, high-light-absorbing, low-reflective glass, and will be mounted on a corrosion-resistant metal racking system.

5.2.2 Solar Array Installation and Assembly

The structural support system (the racking system) for the PV module arrays will consist of corrosion-resistant metal supports, most likely galvanized steel, and will be anchored utilizing prudent engineering principles. One system under consideration includes a design where support posts are driven into the soil using a hydraulic/vibratory technique. This racking system utilizes support posts, which depending upon soil characteristics, are typically spaced 10 feet apart, approximately 13 feet in overall length, and driven to a depth resulting in approximately 4 feet of the post remaining above grade. Support post spacing and lengths are determined as a result of geotechnical design considerations. Although other systems are under consideration, including a skid-mounted design utilizing screw-in anchors, or ballasts, it is expected that the vibra-driven posts would have the greatest degree of construction and reclamation impacts.

Generally, and continuing from the vibra-driven post example above, once the posts have been installed, horizontal support cross-members will be placed and secured. Then a galvanized metal (or aluminum) racking system will be assembled, and will allow the PV modules to be mounted on the overall support assembly. In the case of a skid-mounted design, greater degrees of assembly are anticipated at a central location, e.g. at the edge of the solar field, with subsequent relocation via a forklift of other machine.

Depending upon final equipment design selections, the module support system may also include electro-mechanical drive systems for tracking of the sun's direct rays across the horizon. Addition of such a tracking system will not create significant impacts beyond the process described above.

If final Project design specifies use of a fixed module system, the arrays would be generally oriented along an east-west axis with the modules facing generally to the south. Optimal array orientation could utilize an approximate 25° clockwise clocking, such that the modules face 25° to the west of due south, i.e. an approximate azimuth of 205°. The module configuration would measure approximately seven feet in width. The modules would be tilted at an approximate 20- to 40-degree angle, or as otherwise determined necessary during final project design, to optimize their production.

Alternatively, in the case where a single-axis tracking system is selected, the arrays would be oriented along a north-south axis, with the array angle automatically controlled to best track the sun's path. All other characteristics for the arrays would remain equivalent to the description above, except that the module tilt would likely be flat, or close to 0 degrees.

In either a fixed or single-axis tracking configuration, preliminary design indicates each row of modules to be approximately 300 feet in length (east/west for a fixed system, or north/south for a single–axis system). Final row lengths and spacing between each row (estimated at approximately 10 to 22 feet) will be determined upon completion of final equipment selection and design. The estimated maximum height of the module system measured from ground surface would be approximately 12 to 15 feet.

5.2.3 Module Interconnections, Inverters, and Transformers

Once physically attached to the module/panel racking system, the modules would be electrically connected into strings with those strings electrically connected to each other, via code-compliant methods, either overhead, or above or below ground. The arrays' electrical cables will converge on inverter locations and will be arranged into power blocks. The cables from the modules (or panels) convey direct current (DC) electricity to the inverters, which in turn convert the DC electricity to alternating current (AC) electricity. Any underground cables will be installed utilizing ordinary construction techniques, for example, a rubber-tired backhoe excavator or trencher. All electrical facilities and apparatuses will be installed in compliance with all pertinent codes.

The inverters (electrical devices to convert electricity from direct current to alternating current) and associated medium-voltage transformers would be placed on concrete foundations or pre-manufactured base-skids, and strategically located throughout the solar generation field. The Project will be designed and laid out in standard sized array blocks, e.g. 1-MW. Each of these blocks will include inverters and intermediate step-up transformer(s). The inverter/transformer equipment areas vary in size for each array block, but typical dimensions are approximately 40 feet by 25 feet. The size of these areas will ultimately be determined by final equipment selection.

5.2.4 Project Substation

Depending on final design, utility requirements, and the Project's ultimate build-out size, multiple substations could be required. The Project substation(s) will accept medium-voltage AC electricity from the intermediate transformers, and increase the voltage to a level necessary to match the voltage on the utility-owned grid. Construction of the substation(s) will be compliant with (a) all building code requirements, (b) the interconnecting utility's standards and requirements, and (c) prudent utility practice.

Structures and equipment necessary for a substation include, but are not limited to:

- Various concrete footings and foundations
- A generator step-up transformer
- Isolation switches
- Metering transformers
- Structural steel
- Substation control enclosure
- Perimeter fencing (8-foot-high mesh topped by 3 to 6 strands of barbed wire)

Each project substation is expected to measure approximately 80 feet by 110 feet (ultimately determined by SCE). The substation(s) will be located on the Project site. The preliminary design anticipates placement of the initial substation along the northern site boundary, i.e. adjacent to Avenue 24. Alternate/secondary substation locations are included in the attached project drawing-set, and allow a "greatest impacts" analysis to be conducted. Each substation would require one generator step-up transformer which would increase the voltage from mid-level voltage to high-voltage, e.g. 12 kV or 34.5 kV to 66 kV. The transformer(s) will be oil-filled with forced air cooling.

5.2.5 Electrical Interconnection

The Project would interconnect with an existing Southern California Edison (SCE) subtransmission line which runs adjacent to the project site's northern boundary along Avenue 24. The line also passes through the eastern portion of the project site in a north-south orientation along Road 240. The generation tie-line (gen-tie) connecting the generation facility to the Project's substation, and the tap line connecting the Project's substation to the subtransmission line will be located on the project site, or on right-of-ways across adjacent property as depicted on the attached drawings. The tap line is expected to be approximately 200 to 2,800 feet in length, but could be as long as 2.25 miles as determined by final engineering design. An encroachment permit may be required for the tap line to reach the Point of Interconnection (POI), and will be obtained as necessary upon final design approval by SCE. It is anticipated that approximately six to eight new utility poles will be needed for the connection of overhead electrical wires from the substation to the existing subtransmission line, but in the extreme case as many as forty new poles could be needed.

In addition, SCE's interconnection study results for the Project indicate that a subtransmission line upgrade of SCE's Vestal-Kern_River_3 66-kV line will require approximately 2.5 miles of conductor and insulator replacement, including approximately 24 new wooden poles. Activities for conductor and insulator replacement would occur within an approximate 100-foot-wide corridor along the route. At each turn in the route, SCE will require 100-foot by 300-foot conductor pull sites in line with each route segment. In addition, these activities will require a one-acre construction laydown area, to be located at an existing SCE facility or at a location to be determined by SCE's contractor. As well, the installation of two diverse fiber optic cables, utilizing a combination of new and existing overhead and underground routes, will be necessary for system operations and protection. Preliminary routes identified by SCE are depicted in the attached project drawings. The routes are each approximately 2.5 miles in length. Activities for fiber installation would occur within an approximate 30-foot-wide corridor along the routes. At each turn in the route, SCE will require 50-foot by 100-foot fiber optic pull sites in line with each route segment. In addition, these activities will require an 8,000-square-foot construction laydown area, to be located at an existing SCE facility or at a location to be determined by SCE's contractor. All potential gen-tie, tap line, subtransmission upgrade, and fiber optic cable routes will be analyzed during the environmental review.

5.2.6 Telecommunications

The Project will be designed to employ a Supervisory Control and Data Acquisition (SCADA) system. The SCADA will allow remote monitoring of the Project's operation, as well as remote operations of its

critical control components. Additionally, protection of the 66-kV line requires diverse communications to the relay protection equipment. Access to the Project's SCADA and line protection equipment will be accomplished with either wireless or hard-wired connections between the project site, the Project's remote monitoring and operations center, and the existing SCE Vestal Substation via the new fiber optic cable construction. In addition to SCE-owned communication facilities, other communication services will be procured from locally available commercial service providers, e.g. the Local Exchange Carrier.

5.2.7 Meteorological Data Collection System

The Project will include a meteorological data collection system (weather station). The station's five weather sensors include (1) a pyranometer for measuring solar irradiance, (2) a thermometer to measure air temperature, (3) a barometric pressure sensor, (4) an anemometer to measure wind speed, and (5) a wind direction sensor. Data from each sensor will be collected by the station's data-logger, as well as transmitted to the Project's SCADA system for monitoring and reporting purposes.

5.2.8 Ground Cover

The Project will include ground cover as determined by best engineering practice, maintenance requirements, and pertinent agronomic advice. The current expectation is that appropriate vegetation, determined via consultation with the Tulare County Department of Agriculture or other agronomic expert, e.g. the University of California Agricultural Extension Service, would be utilized on various portions of the project to guard against erosion and to decrease the potential for stormwater runoff. Certain areas of the project site may remain unseeded in order to accommodate operations/maintenance considerations and to decrease fire risks. Project O&M Staff would ensure maintenance of any vegetation as necessary to minimize noxious weeds, pests, and/or fire hazard. Occasional grazing by sheep may also be utilized for vegetation/fire hazard control.

5.3 Site Access and Roads

Access to the site would be via either Avenues 12 or 24 that connect to Highway 65. Inside the site, pervious roadways would provide access to the PV modules and the substation. Points of ingress/egress will maintain a minimum of a 20-foot driveway length from the edge of the adjacent road, with a width of 20 feet.

The on-site road system would utilize permeable surfaces with widths and right-of-ways of 15 and 20 feet respectively. Depending on subsurface soil types, either varying depths of granular aggregate or another engineered stabilization solution would be used. The roads would be designed and installed according to geotechnical engineering recommendations. It is anticipated that any road gravel/aggregate would typically be two to four inches deep. Roads would be graded and compacted pursuant to typical construction practices necessary for service roads and to minimize the amount of gravel import and placement.

Perimeter roads at least 20 feet wide and surfaced with gravel would be constructed around the facility. This perimeter road would provide a fire buffer in accordance with the requirements of the Tulare County Fire Department, would accommodate Project O&M activities, and would also facilitate onsite circulation for emergency vehicles. O&M roads would be constructed to accommodate passenger vehicles consistent with a light-duty utility vehicle or pickup truck.

Additional internal access roads/pathways (for periodic module washing and system maintenance) will also exist and would be unsurfaced dirt roads, most likely planted with ground cover plant material, with widths determined during final engineering.

A minimum 50-foot setback is proposed from the property line to all solar modules and equipment where needed to ensure land use compatibility with adjacent land uses.

5.4 Lighting

Motion-sensitive directional lights will be installed to provide security and approach lighting for the substation and control-equipment enclosure or building. Manually controlled lighting will be installed for O&M activities at other Project locations, such as inverter and intermediate transformer locations. All lighting will be shielded and/or directed downward in order to minimize the potential for glare or spillover onto adjacent properties, and would meet applicable rules and code requirements for outdoor lighting. Project lighting will be in use as determined by the motion sensors, security requirements, prudent utility practices, and/or as necessary for O&M activities.

5.5 Signage

Project signage for the construction and operation phases of the Project will be limited to signage necessary for Project identification purposes, and to comply with the health and safety code ordinances of the regulating authorities. It is anticipated that signage will be mounted on the Project's perimeter fencing. No billboards or signs for advertisement are proposed.

5.6 Landscaping

No landscaping is proposed for the Project. As discussed in Section 5.2.8, apprpriate plant species are intended for use as ground cover.

5.7 Fire Suppression and Safety

The applicant will coordinate with the Tulare County Fire Department to arrange site-specific training for first responders, construction workers, and operations and maintenance staff. The training will familiarize first responders and workers with the hazards and first-response requirements for a solar generation facility, and will include recommended techniques for fire suppression on PV and electrical systems.

Combustible materials within the Project and around the Project boundary, including vegetation, will be actively managed by O&M personnel to minimize fire risks. Management of vegetation, in combination with the onsite, 20-foot-wide access roads will effectively serve to limit paths of any potential onsite fires. Applicant will coordinate with the Tulare County Fire Department during development of an Emergency Action Plan for the site.

5.8 Testing and Energizing

Prior to commencement of commercial operations, commissioning and start-up activities would include testing, calibration, and troubleshooting, as necessary, of all substation equipment, the inverters, electricity collection system, and PV array systems. Initial equipment energization would occur upon completion of successful testing.

5.9 Stormwater Protection

The maximum Project footprint would be approximately 800 acres, excluding any temporary staging areas. Because of the site's generally flat nature and the mounting system's expected ability to accommodate slopes up to 20 degrees, minimal grading is anticipated during construction of the Project. However, because construction activities will disturb greater than one acre of land, a Notice of Intent to

Comply with the State Water Quality Control Board's General Permit to Discharge Storm Water Associated With Construction Activity, under the National Pollution Discharge Elimination System (NPDES) program, will be submitted. To comply, a Storm Water Pollution Prevention Plan (SWPPP) with planned Project details will be prepared, including monitoring and reporting procedures and Best Management Practices (BMPs). Pertinent BMPs will be included, and will likely include BMPs for dewatering procedures, stormwater runoff quality control measures, and concrete waste management. The SWPPP would be based on final engineering design and would include all Project components.

Following construction of the Project, and installation of the ground cover discussed in section 1.5.2.8 above, stormwater is expected to be absorbed into vegetated and other pervious soils in conditions similar to pre-project conditions, with any stormwater run-off utilizing existing drainage features. The Project will comply with any state, local, or federal permitting requirements that are, or become, pertinent to operation of the solar project.

June 29, 2012

Scott Cochran, Planner III
Tulare County Resource Management Agency
5961 South Mooney Blvd.
Visalia, CA 93277

Delivered via email to scochran@co.tulare.ca.us

RE: Revised Tulare Solar Center (PSP 11-062) Project Review – Consultation

Dear Mr. Cochran:

Thank you for the opportunity to provide initial project review comments for the proposed Tulare Solar Center solar project (Project). These comments are submitted on behalf of Defenders of Wildlife (Defenders) and our more than one million members and supporters in the United States, 200,000 of which reside in California.

Defenders is dedicated to protecting all wild animals and plants in their natural communities. To that end, Defenders employs science, public education and participation, media, legislative advocacy, litigation, and proactive on-the-ground solutions in order to prevent the extinction of species, associated loss of biological diversity, and habitat alteration and destruction.

Defenders strongly supports the emission reduction goals found in the Global Warming Solutions Act of 2006 (AB 32), including the development of renewable energy in California. However, we urge that in seeking to meet our renewable energy portfolio standard in California, project proponents design their projects in the most sustainable manner possible. This is essential to ensure that project approval moves forward expeditiously and in a manner that does not sacrifice our fragile landscapes and wildlife in the rush to meet our renewable energy goals.

As we transition toward a clean energy future, it is imperative for our future and the future of our wild places and wildlife that we strike a balance between addressing the near term impact of industrial-scale solar development with the long-term impacts of climate change on our biological diversity, fish and wildlife habitat, and natural landscapes. To ensure that the proper balance is achieved, we need smart planning for renewable power that avoids and minimizes adverse impacts on wildlife and lands with known high-resource values.

The proposed Project encompasses 1,144.23 acres and would generate up to a total of 80 MW of electricity from solar PV panels. The proposed Project site is generally vacant, previously disturbed agricultural land located approximately 4 miles south of the town of Ducor in the southern portion of Tulare County. The Porterville Highway (State Route 65) bisects the project site. Avenue 24 runs adjacent to the northern portion of the proposed Project site and Avenue 12 runs adjacent to the majority of the proposed Project site's southern boundary. The proposed Project site includes both Farmland of Local Importance and some Farmland of Statewide Importance. Surrounding land uses include orchards, dry land farming, grazing land, farmsteads and rural homesites. The southern portion of the proposed Project site is bisected by a seasonal drainage which appears to support seasonal vegetation which may provide additional habitat for special status species. Trees in the farmsteads and residential sites may also provide suitable nesting for special status species.

California Program Office
1303 J Street, Suite 270
Sacramento, CA 95814
Telephone 916-313-5800
Fax 916-313-5812
www.defenders.org/california

In general the proposed Project facilities would consist of the following project components:

- A solar field of PV panels mounted on steel and aluminum structures;
- An electrical collection system that aggregates the output from the PV panels and converts the electricity from direct current (DC) to alternating current (AC) via inverters;
- A substation where the electrical output is combined and its voltage is increased by transformers;
- An interconnection to the Southern California Edison's distribution or transmission system; and
- Internal infrastructure including roads and security fencing.

If built, the Project would entail the significant conversion of open lands to the light industrial nature of a solar power plant and could result in the loss of habitat and displacement of many species including numerous State and Federally listed species such as San Joaquin kit fox (*Vulpes macrotis mutica*), blunt-nosed leopard lizard (*Gambelia sila*), Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*), American badger (*Taxidea taxus*), burrowing owl (*Athene cunicularia*), tri-colored blackbird (*Agelaius tricolor*), western spadefoot toad (*Spea hammondii*), vernal pool fairy shrimp (*Branchinecta lynchi*), striped adobe-lily (*Fritillaria striata*), San Joaquin adobe sunburst (*Pseudobahia peirsonii*), San Joaquin woollythreads (*Monolopia congdonii*), and California jewel-flower (*Caulanthus californicus*) that have the potential to occur at the proposed Project site and/or the surrounding areas. The CEQA document should provide the following:

Science Based Baseline Biological Information and Analysis

The proposed Project is located within the known territory of numerous special status species. Protocol level surveys for these species must be completed. Additionally, the open, undisturbed lands located immediately adjacent to the proposed Project must be taken into consideration as the proposed Project site may be utilized by special status species occurring on those lands. The analysis, and any mitigation strategies, in the CEQA document must be based on these studies. Without protocol survey information, any impact analysis would be tenuous and incomplete and it would not be possible to ascertain if any proposed mitigation measures are appropriate. We recommend the applicant and the County engage in full consultation with the US Fish and Wildlife Service (FWS) and the California Department of Fish and Game (DFG) for guidance on impact assessment and mitigation and that the appropriate protocol level surveys be completed.

Whole Project Addressed

The CEQA document must address the whole of the project including the construction and/or upgrades to gen-tie lines, tap lines, transmission lines, telco lines, fiber optic line, and substations. The biological surveys must include those areas, both on and off-site, as well.

Compensatory Mitigation for Loss of Habitat

Habitat loss is the primary cause of San Joaquin Valley upland species endangerment (U.S. Fish & Wildlife 1998). It is essential that habitat for endangered and special status species in the Project area is protected to ensure survival and recovery of the species. To ensure habitat protection, land use must maintain or enhance the value of the land. The recommended approach for safeguarding such habitat is to protect land in large blocks whenever possible. This minimizes edge effects, increases the likelihood that ecosystem functions will remain intact and facilitates management.

The proposed Project site impacts habitat for a number of State and Federal threatened and endangered species. This loss of habitat would be significant and must be mitigated through the establishment of compensatory mitigation at prescribed ratios. Again, this mitigation should be determined through consultation with FWS and DFG.

Project Construction and Operation Protocols Must be Wildlife Friendly

The CEQA document, in consultation with FWS and DFG, must identify project construction and operation protocols to avoid and minimize impacts to wildlife. Protocols could include San Joaquin kit fox construction protocols, buffer zones, shielded lighting, and a prohibition on the use of rodenticides.

Security Fence Must be Wildlife Friendly

The proposed Project includes security fences around each phase's perimeter which would present a significant barrier to wildlife. The security fences must be designed to be wildlife friendly and allow safe passage of San Joaquin Valley kit fox and other species. In the event that chain-link fencing is used, the bottom of the fence

must be raised 5-7 inches off the ground, knuckled under along the entire perimeter of the Project, thereby permitting easy under-passage by foxes at any location. The fencing must not be electrified.

Cumulative Impacts

The proposed Project is just one of nearly two dozen solar projects proposed or permitted in Tulare County which will convert over 5,000 acres from agricultural and open lands to the light industrial land use of a utility scale solar power plant. Within the southern San Joaquin Valley region there are over 110 permitted or proposed solar projects which would convert over 42,000 acres to solar power plants. The cumulative loss of agricultural and habitat land must be addressed in the CEQA documents.

Conclusion

The proposed Tulare Solar Center project is well-intentioned but good intentions are not enough to overcome the potential permanent impacts this Project would have on the biological resources of the region. This area is home to some of the most imperiled species in California. We strongly encourage the applicant and the County to coordinate and work closely with DFG and FWS to incorporate the necessary protocol level surveys and appropriate strategies to identify, avoid, minimize and mitigate any impacts to biological resources from the proposed Project.

We look forward to reviewing the CEQA documents for this Project. Please include us in any notices for the proposed Project.

Thank you once again for the opportunity to provide comments on the Tulare Solar Center project and for considering our comments. If you have any questions, please me at (530) 902-1615 or via email at kate@kgconsulting.net.

Respectfully submitted,

Kate Kelly
Project Manager

Cc:
Gary Franzen, Wellhead Renewable Energy
Thomas Leeman, USFWS
Julie Vance, DFG

TULARE COUNTY
HEALTH & HUMAN SERVICES AGENCY
DEPARTMENT OF ADMINISTRATION · KEVIN MARKS · DIRECTOR
ENVIRONMENTAL HEALTH SERVICES · VIVIAN NELSON, MSEE REHS · DIVISON MANAGER

Cheryl L. Duerksen, Ph.D.,
Agency Director

June 14, 2012

SCOTT COCHRAN
RESOURCE MANAGEMENT AGENCY
5961 S MOONEY BLVD
VISALIA CA 93277

Re: PSP 11-062 – Tulare Solar Center

Dear Mr. Cochran:

This office has reviewed the above referenced matter. Based upon our review, we offer the following recommendations with this project:

1. Leach fields should not be located under structures, pavement, or areas subject to vehicle traffic.
2. New sewage disposal systems shall be designed by an Engineer, Registered Environmental Health Specialist, Geologist, or other competent persons, all of whom must be registered and/or licensed professionals knowledgeable and experienced in the field of sewage disposal system and design. The specifications and engineering data for the system shall be submitted to the TCEHSD for review and approval prior to the issuance of a building permit.
3. If the site ever handles or stores quantities of hazardous materials in excess of 55 gallons of a liquid, 500 pounds of a solid, or 200 cubic feet of a compressed gas, or **any** amount of a hazardous waste, then the site will be required to submit a Hazardous Materials Business Plan to the Tulare County Environmental Health Services Division. The facility shall immediately contact TCEHSD at (559) 624-7400 if the site ever meets these threshold quantities.
4. Equipment storage areas shall be properly managed to prevent nuisance of dust, odors, vector harborage and breeding.

Sincerely,

Allison Shuklian
Environmental Health Specialist
Environmental Health Services Division

DEPARTMENT OF TRANSPORTATION
DISTRICT 6
1352 WEST OLIVE AVENUE
P.O. BOX 12616
FRESNO, CA 93778-2616
PHONE (559) 488-7396
FAX (559) 488-4088
TTY (559) 488-4066

Flex your power!
Be energy efficient!

June 15, 2012

2135-IGR/CEQA
6-TUL-65-2.98
PSP 11-062
TULARE SOLAR CENTER (2)

Mr. Scott Cochran, Planner III
County of Tulare
Resource Management Agency
5961 S. Mooney Blvd.
Visalia, CA 93277

Dear Mr. Cochran:

Thank you for the opportunity to review the revised site plan number PSP 11-062 proposing to develop a solar photovoltaic generating facility including substations and an operations/management building on 1,144 acres. Caltrans reviewed and commented on the original site plan for this proposal in January of this year. Per the revised site plan, it appears 495 acres of property have been added to the project on the west side of State Route (SR) 65. The project is located between Avenues 12 and 24 in Tulare County, approximately five miles north of the SR 65/SR 155 intersection. Caltrans has the following comments:

The previous comments of our letter dated January 27, 2012 (copy enclosed) continue to be valid. In addition, please consider the following:

Page 6 of the operational statement for the project indicates access to the site will be on either Avenue 24 from the north or Avenue 12 from the south, yet the alternative provided in the revised site plan package shows access via SR 65 alone. No direct access from SR 65 is allowed, and all project access driveways should be located on Avenues 12 and 24 as proposed in the operational statement.

With the addition of the property on the west side of SR 65, Caltrans will require an irrevocable offer of dedication of right-of-way of 42 feet along the SR 65 frontage. This segment of SR 65 in the vicinity of the proposed project is planned for 194 feet. The current right-of-way for this segment is 110 feet.

Please send a response to our comments and a copy of the Council resolution related to the proposed project. If you have any questions, please call me at (559) 488-7306.

Sincerely,

DAVID DEEL
Associate Transportation Planner
District 6

Enclosure

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY

DEPARTMENT OF TRANSPORTATION
DISTRICT 6
1352 WEST OLIVE AVENUE
P.O. BOX 12616
FRESNO, CA 93778-2616
PHONE (559) 488-7396
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Flex your power!
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January 27, 2012

2135-IGR/CEQA
6-TUL-65-2.98
PSP 11-062
TULARE SOLAR CENTER

Mr. Michael Washam, Project Planner
County of Tulare
Resource Management Agency
5961 S. Mooney Blvd.
Visalia, CA 93277

Dear Mr. Washam:

Thank you for the opportunity to review the site plan number PSP 11-062 proposing to develop a solar photovoltaic generating facility including substations and an operations/management building on 649 acres. The project site is located at the southeast quadrant of State Route (SR) 65 and Avenue 24 in Tulare County, approximately five miles north of the SR 65/SR 155 intersection. Caltrans has the following comments:

No direct access from SR 65 is allowed. The project access driveway should be located on Avenue 24 as proposed.

Based on the information provided on the site plan, it is anticipated the proposed project would have negligible traffic impact to the State Highway System (SHS). However, this project would increase automobile traffic as well as truck traffic during and after construction at the SR 65/Avenue 24 intersection. Caltrans recommends the existing intersection should be reconstructed to conform to Highway Design Manual Figure 405.7. Truck-turn templates should be utilized in the design of the improvements.

According to our Transportation Concept Report (TCR), this segment of SR 65 in the vicinity of the proposed project is planned for 194 feet. The current right-of-way for this segment is 110 feet. Therefore, Caltrans requests that an irrevocable offer of dedication of right-of-way of 42 feet along the SR 65 frontage be made to Caltrans to accommodate the ultimate configuration of SR 65. Dedications required by the Lead Agency need to be shown on a revised site plan and forwarded for our review (prior to approval by the Lead Agency). A summary of the requirements for right-of-way dedications is enclosed.

Any advertising signs within the immediate area outside the State right-of-way need to be cleared through the Caltrans Right-of-Way Division, Office of Outdoor Advertising. The project proponent must construct and maintain the advertising signs without access to the State Routes. Contact *Joel Ibarra at (916) 651-9359* for additional information or to obtain a sign permit application. Additional information on Caltrans Outdoor Advertising Permit requirements may also be found on the Internet at www.dot.ca.gov/hq/oda.

An encroachment permit must be obtained for all proposed activities for placement of encroachments within, under or over the State highway rights-of-way. Activity and work planned in the State right-of-way shall be performed to State standards and specifications, at no cost to the State. Engineering plans, calculations, specifications, and reports (documents) shall be stamped and signed by a licensed Engineer or Architect. Engineering documents for encroachment permit activity and work in the State right-of-way may be submitted using English Units. The Permit Department and the Environmental Planning Branch will review and approve the activity and work in the State right-of-way before an encroachment permit is issued. Encroachment permits will be issued in accordance with Streets and Highway Codes, Section 671.5, "Time Limitations." Encroachment permits do not run with the land. A change of ownership requires a new permit application.

Dust control measures shall be implemented on the site in a manner to prevent dust from entering the State right-of-way.

No water from the proposed project shall flow into the State right-of-way without approval from the District Hydraulic Engineer.

Please send a response to our comments and a copy of the Council resolution related to the proposed project. If you have any questions, please call me at (559) 488-7306.

Sincerely,

DAVID DEEL
Associate Transportation Planner
District 6

Enclosure

DEPARTMENT OF TRANSPORTATION
CENTRAL REGION SOUTHEAST SURVEYS
855 "M" STREET
SUITE 200
FRESNO, CA. 93721
ATTN: Calvin Henry
PHONE (559) 445-6573
FAX (559) 445-6560
E-mail: Calvin_Henry@dot.ca.gov

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CALTRANS DISTRICT 6

CENTRAL REGION SURVEYS OFFICE

REQUIRED INFORMATION FOR R/W DEDICATIONS

1) A Copy of the vesting deed(s) for the subject property.

2) Either a copy of a Title Report, or Guarantee of the subject property, **DATED WITHIN 30 DAYS OF SUBMITTAL** of the Dedication Package.

3) Copy of the Assessor's Map.

4) Assessor's Parcel Number (APN) of the property, if not stated in the Title Report.

5) State whether the property is within city limits or in an unincorporated area, if not stated in the Title Report.

6) If the property is a lot of a Tract or a parcel of a Parcel Map, provide the lot or parcel number and a copy of the recorded map(s).

7) Provide copies of any record map or deed cited in the documents provided.

8) If unsubdivided land, note the Section, Township, and Range where the property is located.

9) A Legal description of the dedication parcel signed and sealed by a Licensed Professional Land Surveyor or a Civil Engineer registered prior to 1982 on 81/2" X 11" paper. Letter EXHIBIT "A" at the top of the legal description (see attached sample legal).

10) A Platt showing pertinent survey data, such as bearings, distances, and curve data, where applicable, and the area of the dedication parcel on 81/2" X 11" paper. If the parcel is located in unsubdivided land, show ties to the nearest two section corners and/or quarter-section corners. Letter EXHIBIT "B" at the top of the Plat (see attached sample plat).

11) A Copy of the traverse calculations, if a metes and bounds description, for the dedication parcel to include error of closure and area.

12) A Copy of the **CALTRANS REQUIREMENTS** describing the location and amount of right-of-way to be dedicated. This can be acquired from the Caltrans Planning Department, Caltrans Permits Department, or local Government agency requiring the dedication.

NOTE:

If any of the above listed items are not submitted, it will either cause a delay or halt in the Dedication process.

If there are any questions, please contact Calvin Henry, Caltrans Surveys Department, at 559-445-6573.

Mail packet of information to:

DEPARTMENT OF TRANSPORTATION
CENTRAL REGION SOUTHEAST SURVEYS
855 "M" STREET
SUITE 200
FRESNO, CA. 93721

ATTN: Calvin Henry

DEPARTMENT OF CONSERVATION

Managing California's Working Lands

Division of Oil, Gas, & Geothermal Resources

4800 Stockdale Highway, Suite 417 • BAKERSFIELD, CALIFORNIA 93309

PHONE 661/322-4031 • **FAX** 661 / 861-0279 • **WEB SITE** conservation.ca.gov

June 14, 2012

Scott Cochran, Planner III
Tulare County Resource Management Agency
5961 South Mooney Blvd.
Visalia, California 93277

Subject: PSP 11-062
Tulare Solar Center Project
In Portions of Sections 22-23 and 27-28, T.24S., R.27E., M. D. T. R. S.

Dear Mr. Cochran:

The Department of Conservation's Division of Oil, Gas, and Geothermal Resources (Division) has reviewed the above referenced solar generation project. The Division supervises the drilling, maintenance, and plugging and abandonment of oil, gas, and geothermal wells in California. The Division offers the following comments for your consideration.

The proposed project is located outside the administrative boundaries of any oil field. However, there are three plugged-and-abandoned dry holes situated within project boundaries in Sections 22, 27, and 28. Please refer to the attached Location Map. In addition, the three abandoned wells are summarized in the accompanying table, Tulare Solar Center - Onsite Historic Dry Holes, also attached.

The Division recommends that the abandoned wells remain undisturbed. However, they will need to be addressed if solar panels, electrical substations, roads, or other structures are planned in proximity to them and/or access to them is impeded. If encountered during earthmoving and construction activities, one or more of the wells may need to be exposed for inspection and leakage testing. The Division recommends that the well locations be recorded on all future maps related to this project with a 10-foot no-build radius; please refer to the attached *Proximity* diagram. For additional information, please check the Division's website at:

http://www.conservation.ca.gov/dog/for_operators/Pages/construction_site_review.aspx.

The Division recommends that no structure be built over or in close proximity to an abandoned well location. Section 3208.1 of the Public Resources Code authorizes the State Oil and Gas Supervisor to order the reabandonment of a previously abandoned well when construction of any structure over or in the proximity of a well could result in a hazard. The cost of re-abandonment operations is the responsibility of the owner or developer of the project upon which the structure will be located.

Regardless, if these or any other abandoned or unrecorded wells are uncovered or damaged during excavation or grading, remedial plugging operations may be required. This office must be contacted to obtain information on the requirements for and approval to perform remedial operations.

Thank you for the opportunity to comment on this project. If you have any questions, please contact **Dayne L. Frary** at the Division's Bakersfield district office, phone **(661) 334-4601**.

Sincerely,

Burton R. Ellison

Burton R. Ellison
District Deputy

State of California
Department of Conservation

TULARE SOLAR CENTER
PROJECT PROPERTY

LOCATION MAP
TULARE SOLAR CENTER PROJECT
SECTIONS 22-23 and 27-28, T.24S., R.27E., M. D. T. R. S.
SOURCE: DOGGR ONLINE MAPPING SYSTEM
JUNE 2012 DLF

Tulare Solar Center
Onsite Historic Abandoned Dry Holes

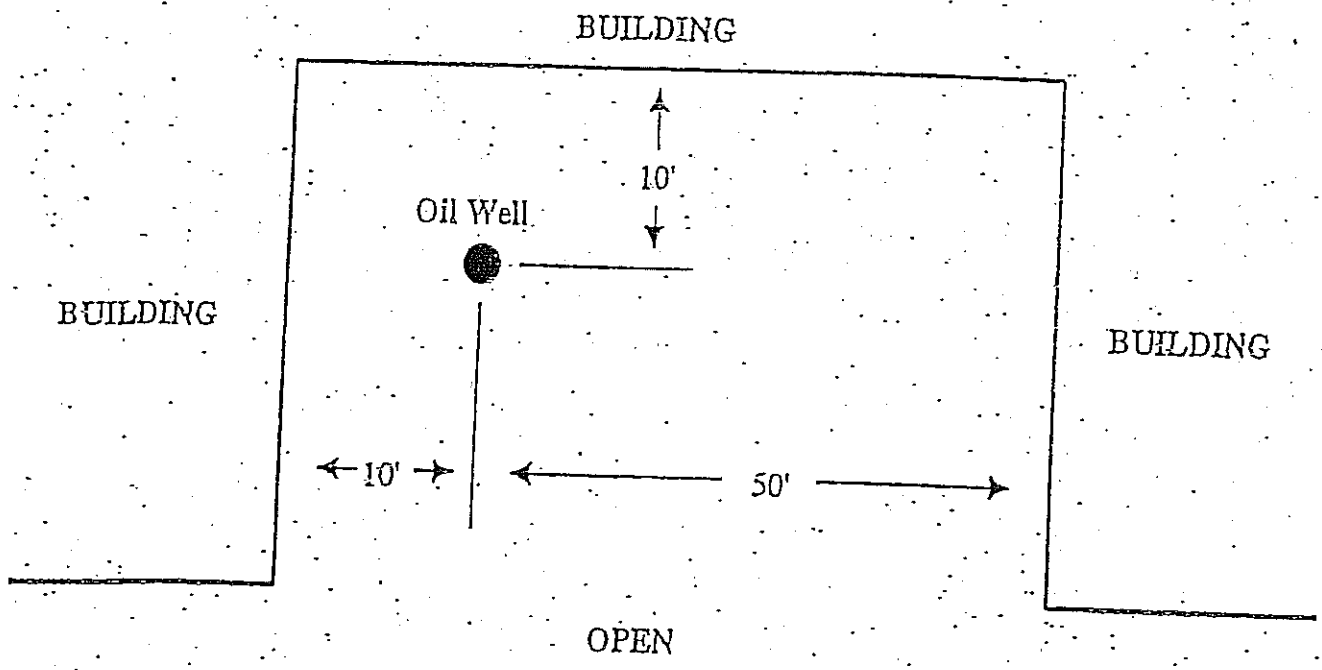
Operator	Sec, Twp-Range	Well	API No.	Status	Location	Elevation	Latitude	Longitude
Vedder Bros, Inc.	22, T24S-R27E	Hart 1	107-00463	Dry Hole Abd Sept 1929	Fr NW cor 1000S 1650E	604 MAT	35.831337	-119.048234
BP Exploration U.S.A., Inc.	27, T24S-R27E	Lubking 14	107-00470	Dry Hole Abd Nov 1953	Fr W/4 cor 330N 330E	573 KB	35.813463	-119.052647
Pacific Oil and Gas Dev't Corp.	28, T24S-R27E	Lubking 26-28	107-00471	Dry Hole Abd Dec 1964	Fr W/4 cor 990S 990E	548 KB	35.809479	-119.068351

KEY

Abd Abandoned
KB Kelly Bushing
MAT Concrete Pad at Ground Level

PROXIMITY

Proximity shall be defined as being within ten feet from the property line and/or structure. The distance shall be measured from the center of the well extending out to the sides of the building. Two adjacent sides shall not be less than ten feet, with the third side no less than 50 feet. The fourth side shall remain open to allow access to the well for workovers or abandonment.



NOTE: If the operator of an active or idle well feels that the distance from the building to the well is unsafe to work over, they may request this Division to review the special circumstances, and we will contact the developer in writing of our decision.

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

June 19, 2012

Scott Cochran
County of Tulare
Planning Department
5961 South Mooney Blvd.
Visalia, CA 93277

Project: Case No. PSP 11-062 (Tulare Solar/Wellhead Services, Inc.) Revised Site Plan
District CEQA Reference No: 20120004

Dear Mr. Cochran:

The San Joaquin Valley Unified Air Pollution Control District (District) has reviewed the project referenced above consisting of revised site plan for a solar facility, located at 4 miles south of Ducor, CA. The District has previously commented on this project and has no additional comments at this time.

District staff is available to meet with you and/or the applicant to further discuss the regulatory requirements that are associated with this project. If you have any questions or require further information, please call David McDonough at (559) 230-5920.

Sincerely,

David Warner
Director of Permit Services

for, Arnaud Marjollet
Permit Services Manager

DW:dm

cc: File

Seyed Sadredin
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: 661-392-5500 FAX: 661-392-5585

www.valleyair.org www.healthyairliving.com

RESOURCE MANAGEMENT AGENCY

INTEROFFICE MEMORANDUM

TO: Scott Cochran, Project Planner

FROM: Kevin Rivel, Tulare County Fire Inspector – Kevin Rivel

SUBJECT: Case No. PSP 11-067

The Fire Department has ~~no~~ THE FOLLOWING recommendations in response to this item.

1. Fire Department requires a Knox box to be installed at an approved location to permit entry to the site.
2. Access gates shall be set back 30 feet from the roadway for fire apparatus access.
3. All combustible vegetation shall be removed from the site and Tulare County fire Department approved measures taken to prevent the accumulation of combustible vegetation that would create a fire hazard.
4. Access roads of an all-weather surface shall be provided so that no portions of the photovoltaic panels are farther than 155 feet from a fire apparatus access road.
5. Access roads shall be a minimum of 20 feet in width (non-obstructed), with a maintained 13 feet 6 inches vertical clearance.
6. 20-foot fire access roads shall be constructed at intervals of no greater than 310 feet.
7. Applicant shall be responsible for training fire personnel of facility operations, hazards and emergency procedures for shutting down the operation.
8. Posted address visible from roadway, min. 4 inch numbers.
9. If buildings are proposed, National Fire Protection Agency (NFPA) 1142 standards for rural water supplies shall be required.

If you have any questions please call AL MILER @ 624-7058

~:~

From: "Patricia Stever Blattler" <pstever@tulcofb.org>
To: "'Scott Cochran'" <SCochran@co.tulare.ca.us>
CC: "Mike Ennis" <mennis@co.tulare.ca.us>, "Ed Needham" <esneedham@comcast.net>
Date: 06/22/2012 08:23
Subject: Solar letter PSP 11-062, June 20, 2012
Attachments: Solar letter PSP 11-062, June 20, 2012.pdf; Checklist.pdf; FrequentlyAskedQuestions.pdf; Memo to County Supervisors.pdf; ModelResolutionofAcceptance.docx; SampleSolar-UseEasementAgreement(1).docx

Dear Scott,

Please find attached a comment letter on Solar Project, PSP 11-062 and background information on SB 618, the solar easement bill that is now available to use as a tool for allowing solar to locate on marginal farmlands and rescind their Williamson Act contracts. I hope this option could be explored with this project.

Tricia Stever Blattler

Executive Director

Tulare County Farm Bureau

PO Box 748

Visalia, CA 93279

559-732-8301

pstever@tulcofb.org

www.tulcofb.org

TULARE COUNTY FARM BUREAU

Mission: to promote and enhance the viability of Tulare County agriculture.

June 20, 2012

County of Tulare, Resource Management Agency
Attn: Scott Cochran, Planner III
5961 So. Mooney Blvd.
Visalia, CA 93277

RE: Comments on PSP 11-062, Tulare Solar Center/Wellhead Services, Inc.

Dear Mr. Cochran,

The Tulare County Farm Bureau [TCFB] is a non-governmental, non-profit, voluntary membership association whose purpose is to protect and promote agricultural interests throughout Tulare County and to find solutions to the problems of the farm, the farm home and the rural community. TCFB strives to protect and improve the ability of farmers and ranchers engaged in production agriculture to provide a reliable supply of food and fiber through responsible stewardship of California's resources. TCFB represents over 2,500 member families in Tulare County.

Thank you for the opportunity to comment on the site plan for PSP 11-062. The land available is approximately 1,144 acres based on the site plan, up to 800 acres is being proposed for conversion to commercial solar. The farmland is described as dry land farming, with a non-prime designation with no irrigation, and with a designation of "Farmland of Local Importance" on all but 20 acres designated "Lands of Statewide Importance"; and has a current Williamson Act contract in place.

Farm Bureau has developed very specific policies relative to the conservation of agricultural land and solar generation of electricity on agriculturally zoned land. Regarding the project PSP 11-062 we support removing the parcel(s) from the Land Conservation Act through non-renewal. The non-renewal process represents a landowner's contractual right and is the preferred method of exiting a contract according to the California Supreme Court (*Sierra Club v. City of Hayward*). We view inappropriate cancellations of the Williamson Act contracts as a violation of those contracts between the landowner, county and state. The cancellation of a Williamson Act contract should only be approved under extraordinary circumstances. We also believe that land uses that result in the cessation of agricultural pursuits on contracted land clearly undermine the program's integrity and should not be allowed in agricultural preserves.

Further, we believe that solar energy projects located on private agriculturally productive lands should be subordinate to the agricultural operation, and should not permanently impede or reduce the productive agricultural capacity of the land for future uses. Thus, reclamation of the land to its previous agricultural condition is crucial and appropriate financial assurances for reclamation are essential. Large scale utility-sized solar electricity facilities proposed for exclusive agricultural zoning designations should require a conditional use permit to mitigate the potential negative impacts on neighboring farming operations.

Farm Bureau also supported the enactment of SB 618 (Wolk) to provide another alternative for landowners that wish to site utility scale solar power projects on their contracted lands. This new law allows for a solar easement to be placed on marginally productive or physically impaired parcels of land, by rescinding the Land Conservation Act contract during the period in which the electrical facility would be in operation. We supported SB 618 in the hope that it would be an effective tool to encourage these industrial land uses on our least productive or physically impaired farmland in order to protect the integrity of the Williamson Act as well as keep our best prime farmland for the production of food and fiber. Attached to this letter are sample documents and information on SB 618 and executing a solar easement agreement to rescind the Land Conservation contract.

Sincerely,

Trina Steven Blattler

PATRICIA STEVER BLATTLER
Executive Director

cc: TCFB Land Use Committee
Tulare County Ag Policy Advisory Committee
Tulare County Board of Supervisors
CA Dept. of Conservation

737 North Ben Maddox Way • Visalia, CA 93292 • Mailing: PO Box 748 • Visalia, CA 93279 • (559) 732-8301 • (559) 732-7029 FAX
E-mail: tcfb@tulcofb.org • Web: www.tulcofb.org • Join Farm Bureau: www.joinfb.org

CHECKLIST FOR THE CREATION OF A SOLAR-USE EASEMENT

Eligibility

- *Determination* – For land to be eligible for a Solar-Use Easement, the Department of Conservation (DOC) must determine that the land meets the following two requirements showing that the land is marginally productive or physically impaired:
  - *Eligibility Requirements*:
    - *Requirement 1* – The land must either:
      - Consist predominantly of soils with significantly reduced agricultural productivity for agricultural activities due to chemical or physical limitations, topography, drainage, flooding, adverse soil conditions, or other physical reasons;
        OR
      - Have severely adverse soil conditions that are detrimental to continued agricultural activities and production. Examples of severely adverse soil conditions include contamination by salts or selenium, or other naturally occurring contaminants.
    - *Requirement 2* – The land is not among lands designated on Farmland Mapping and Monitoring Program maps as prime farmland, unique farmland, or farmland of statewide importance.
      - HOWEVER, land designated as prime farmland, unique farmland, or farmland of statewide importance may still qualify for a Solar-Use Easement if DOC determines that eligibility factors exist that limit the use of the land for agricultural activities.
      - For the purpose of Solar-Use Easement eligibility, important farmland designations may not be changed solely due to irrigation status.
  - *Factors* – In making its determination, DOC considers the following information that landowners must provide to the extent applicable:
    - A written narrative demonstrating that even under the best currently available management practices, continued agricultural practices would be substantially limited due to the soil's reduced agricultural productivity from chemical or physical limitations.
    - A recent soil test demonstrating that the characteristics of the soil significantly reduce its agricultural productivity.
    - An analysis of water availability demonstrating the insufficiency of water supplies for continued agricultural production.
    - An analysis of water quality demonstrating that continued agricultural production would, under the best currently available management practices, be significantly reduced.
    - Crop and yield information for the past six years.

Nature of Easement/Agreement

- *Term*: (GC § 51191.2.)
  - Perpetuity
  - Term of Years – not less than 20 years unless a shorter term is requested by landowner
    - Only the landowner can request a term of less than 20 years with a minimum of 10 years.
    - At end of the term, the easement is extinguished.
    - The easement may provide that at the end of the term, or on another date, the easement may be converted to a self-renewing easement whereby each year on a specified date a year is added to the term, unless a notice of nonrenewal has been served.
  - Self-Renewing – not less than 20 years unless a shorter term is requested by landowner
    - Only the landowner can request a term of less than 20 years with a minimum of 10 years.
    - Each year on the anniversary date of the easement, or another date acceptable to the parties, another year is added to the term of the easement unless a notice of nonrenewal has been served.
- *Conditions*: (GC § 51191.3.)
  - Mandatory:
    - Restrictions, conditions, or covenants necessary to restrict use of land to PV solar facilities. (GC § 51191.3, subd. (a).)
    - Surety Bond (required for term-of-years and self-renewing easements). (GC § 51191.3, subd. (c).)
    - Soil and Restoration Management Plan: (GC § 51191, subd. (c).)
      - How the soil will be managed during the life of the easement.
      - How impacts to adjacent agricultural operations will be minimized.
      - How the land will be restored to its previous general condition, as it existed when the project was approved, upon the termination of the easement.
  - Optional: (GC § 51191.3, subd. (b).)
    - Onsite Mitigation
    - Offsite Mitigation
    - Surety Bond (County can determine whether to require a surety bond for perpetual easements. Surety Bond required for term and self-renewing easements – see above.)
    - Provision for necessary amendments. (Note: This is optional but highly recommended.)
  - Practical Considerations
    - Once a Solar-Use Easement is formed, the landowner is obligated to use the land for "collection and distribution of solar energy for the generation of electricity." Because a project proponent must have site control in order to obtain a power purchase agreement (PPA), but entering into a Solar-Use Easement (to demonstrate site control) would mandate use of the land for a solar facility regardless of whether a PPA was obtained, a dilemma is created. To resolve this issue, a term may be added to the easement agreement so the rescission of the Williamson Act contract and creation of the Solar-Use Easement only occurs upon the project proponent receiving an acceptable PPA. If no acceptable PPA is obtained, then the conversion is never

triggered and the Williamson Act remains in place.

- *Extinguishment:* (Article 3 commencing with GC § 51192.)
  - A perpetual and term Solar-Use Easement may be extinguished on all or a portion of the parcel(s) only by immediate termination or by returning the land to coverage under a Williamson Act contract.
    - Termination – Prior to any action by the county to tentatively approve the termination of a Solar-Use Easement, the county assessor must determine the current fair market value of the affected parcel(s) as though the parcel(s) were free of the easement restriction.
      - This appraisal shall be used to determine and certify to the county auditor the amount of the termination fee that the landowner must pay the county treasurer upon termination. That fee shall be an amount equal to 12.5 percent of the termination valuation of the property.
      - The county may waive all or a portion of the termination fee if it finds that it is in the public interest to do so, and it may extend the time for making the payment or a portion of the payment for a period of time not to exceed the unexpired period of the easement, had it not been terminated, if both of the following occur:
        (1) The termination is caused by an involuntary transfer or change in the use of the land, and the land is not immediately suitable, nor will it be immediately used, for a purpose that produces a greater economic return to the owner.
        (2) The waiver or extension of time is approved by the Secretary of the Natural Resources Agency. The secretary must approve a waiver or extension of time if (a) doing so is consistent with the policies of the Solar-Use Easement law and (b) the county complied with statutory Solar-Use Easement extinguishment provisions.
      - Termination fees must be transmitted to the State Controller, similar to Williamson Act contract cancellation penalty fees.
  - A self-renewing Solar-Use Easement may be extinguished on all or a portion of the parcel(s) by nonrenewal, immediate termination, or returning the land to its previous Williamson Act contract.
    - Nonrenewal – Either the landowner or the county may serve a written notice of nonrenewal on all or a portion of the parcel(s) subject to the easement.
      - The notice must be given at least 90 days before the annual renewal date.
      - A notice of nonrenewal given by the county may be protested by the landowner, and the county may withdraw the notice before the renewal date. The landowner is required to restore the land subject to the easement--i.e., remove the solar panels and restore the land to its previous condition—upon extinguishment of the easement only when the landowner requests nonrenewal or immediate termination. If the county requests nonrenewal of the easement, the landowner may continue to operate the facility after the solar-use easement is extinguished.

PROCESS

Step 1: Submit to county an application requesting a Solar-Use Easement Conversion Agreement (GC § 51191.1.). The application should include:

- Request that the county request an Eligibility Determination from DOC (GC § 51191.)
- Request that the County Assessor conduct a fair market value (FMV) determination (GC § 51255.1, subd. (c)(1).)
- Information for submission to DOC:
  - Eligibility Criteria (GC § 51191, subd. (b).)
  - Soil and Restoration Management Plan (GC § 51191, subd. (c).)
  - Any applicable fee to DOC (GC § 51191, subd. (e).)
  - Information regarding Surety Bond if required. (Plan for amount and where it will be held etc.) (GC § 51191.3, subd. (c).)

Step 2: County requests determination from DOC. (GC § 51191, subd. (a).)

Step 3: DOC consults with CDFA and makes Eligibility Determination. (GC § 51191.)

Step 4: If necessary, amend instrument to include recommendations regarding the Soil and Restoration Management Plan provided by DOC in Step 3. (GC § 51191, subd. (c).)

Step 5: County Assessor certifies to the Board of Supervisors the FMV of the land and sends notice of that certification to the landowner and DOC. (GC § 51255.1, subd. (c)(1).)

Step 6: Board of Supervisors determines and certifies to the County Auditor the amount of the rescission fee (6.25 percent of FMV if Williamson Act Contract; 12.5 percent of FMV if FSZ contract) (GC § 51255.1, subd. (c)(2).)

Step 7: County adopts resolution accepting or approving the instrument (GC § 51191.4.)

Step 8: Applicant provides County with notice that an enforceable power purchase agreement has been obtained, pays rescission fee to the County Treasurer (GC § 51255.1, subd. (c)(2).), and provides County with any necessary financial assurance (GC § 51191.3, subd. (c) and § 51191.3, subd. (b)(3).).

Step 9: Rescission fee is transmitted to the State Controller. (GC § 51192.2, subd. (e).)

Step 10: Recordation of Instrument by Clerk of Board of Supervisors. (GC § 51191.6.)

Frequently Asked Questions Regarding the Implementation of Solar-Use Easements

1) WHAT IS THE MINIMUM LENGTH OF A SOLAR-USE EASEMENT?

The new law allows a landowner to petition a county for rescission of the landowner's Williamson Act contract if the parcel or parcels prove to be predominantly marginally productive or physically impaired for agricultural production, as long as the land is simultaneously enrolled in a solar-use easement agreement for a period of not less than 20 years, unless the landowner requests a 10-year agreement. However, since Power Purchase Agreements endure for a minimum of 20 years, landowners will likely request a minimum of a 20-year restriction.

2) WHAT LAND IS ELIGIBLE FOR A SOLAR-USE EASEMENT?

An eligible parcel must qualify as *marginally productive* or *physically impaired* for agricultural purposes.

- *Marginally productive farmland* means it consists predominantly of soils with significantly reduced agricultural productivity for agricultural activities due to chemical or physical limitations, topography, drainage, flooding, adverse soil conditions, or other physical reasons, or is physically impaired for agricultural purposes.

- *Physically impaired land* has severely adverse soil conditions that are detrimental to continued agricultural activities and production. Severely adverse soil conditions may include, but are not limited to, contamination by salts or selenium, or other naturally occurring contaminants.

Generally, land designated by the Farmland Mapping and Monitoring Program as prime farmland, farmland of statewide importance, or unique farmland is not eligible for a Solar-Use Easement, except when the Department of Conservation, in consultation with the Department of Food and Agriculture, determines that the land is eligible due to existing circumstances that limit the use of the land for agricultural activities.

3) IS NONPRIME LAND AUTOMATICALLY ELIGIBLE FOR RESCISSION AS "MARGINALLY PRODUCTIVE OR PHYSICALLY IMPAIRED," OR CAN A COUNTY DIFFERENTIATE BETWEEN PRODUCTIVE NONPRIME AGRICULTURAL LAND AND NONPRIME LAND WITH "SIGNIFICANTLY REDUCED" AGRICULTURAL PRODUCTIVITY?

Nonprime land is not automatically eligible for a contract rescission under SB 618. The county remains the ultimate policymaker on what land within its jurisdiction is eligible. A Williamson Act contract rescission and the simultaneous enrollment of the affected land into a Solar-Use Easement are subject to the agreement of the board of supervisors. If the county wants to differentiate between productive nonprime grazing land and marginally productive nonprime grazing land, it may do so. A county may also consider the protection of valuable open space and wildlife habitat areas that may qualify as marginally productive for livestock grazing as a higher priority than a Solar-Use Easement.

4) **WHAT ARE SOME EXAMPLES OR POTENTIAL STANDARDS THAT WOULD QUALIFY AS "SIGNIFICANTLY REDUCED AGRICULTURAL PRODUCTIVITY?"**

The law requires the applicant for a Solar-Use Easement to provide a written narrative demonstrating that even under the best currently available management practices, continued agricultural practices would be substantially limited due to the soil's reduced agricultural productivity from chemical or physical limitations. Examples might include, but are not limited to, poor soil texture or structure, the presence of a clay-pan or hard-pan in the soil's substrata that prevents water penetration, a perched water table, or alkali soil characteristics due to the presence of high soluble solids.

5) **WHY WOULD AN APPLICANT REQUEST A PERPETUAL SOLAR-USE EASEMENT?**

If absolutely certain the land will never be used for something else, an applicant may request a perpetual easement. Even though these new Solar-Use Easements are not perpetual conservation easements as defined by Civil Code section 815.1, by adopting SB 618 the Legislature created these new perpetual easement agreements. While it is legally possible to create a perpetual Solar-Use Easement, as a practical matter it may not make economic sense to choose a perpetual easement. The reason is that it would require the payment of the 12.5 percent termination fee to extinguish the easement agreement should the landowner ever wish to cease using the land for solar PV facility. Nonrenewal is not an option for perpetual easements because by definition they are forever. Most landowners should be directed to a term easement of 20 years with an option to convert to a self-renewing agreement in year 19. This approach would allow the easement to continue on a self-renewing basis indefinitely with only a one-year nonrenewal period.

Also, pursuant to Government Code section 51192.1, if a landowner ever terminates a perpetual easement, the land must be restored to the conditions that existed before the easement.

6) **CAN A COUNTY WAIVE, REDUCE, OR DELAY THE PAYMENT OF THE EASEMENT TERMINATION FEE?**

Yes, when the property is condemned or if the county determines that a proposed new use is in the public interest. The "change in use" provision allows the county to waive all or a portion of the termination fee and allows an extension in the time for making the payment. Any extension of time for the payment of the termination fee must not exceed the unexpired period of the easement had it not been terminated.

7) **IS A POWER PURCHASE AGREEMENT (PPA) REQUIRED FOR THE CREATION OF A SOLAR-USE EASEMENT?**

A PPA is not legally required, but conditioning the creation of a Solar-Use Easement on a PPA is generally a good idea. This is due to the fact that once a Solar-Use Easement is created, the landowner is obligated to use the land for "collection and distribution of solar energy for the generation of electricity." A dilemma is created because a project proponent must have site control to obtain a PPA, but entering into a Solar-Use Easement (to demonstrate site control) would mandate use of the land for a solar PV facility regardless of whether a PPA was obtained. To resolve this Catch-22 situation, a term may be added to the easement agreement so the rescission of the Williamson Act contract and creation of the Solar-Use Easement occurs only upon the

project proponent entering into a PPA. If no PPA is entered into, then the rescission of the Williamson Act contract is never triggered and thus it remains in place.

8) **CAN A LANDOWNER CONTINUE TO OPERATE A SOLAR PV FACILITY AFTER THE SOLAR-USE EASEMENT HAS BEEN EXTINGUISHED?**

Generally, no. Government Code sections 51191.3, subdivision (c), and 51192.1 require a landowner to "restore the land that is subject to the easement to the conditions that existed before approval of the easement by the time the easement is extinguished." This restoration requirement does not apply in situations where the county nonrenews the easement; however, nonrenewal by a county does not relieve the landowner from the surety bond requirement or the landowner's restoration obligation when the facility is ultimately decommissioned.

MEMO

CALIFORNIA
FARM BUREAU
FEDERATION

DATE: FEBRUARY 14, 2012

TO: ALL CALIFORNIA COUNTY SUPERVISORS

FROM: JOHN R. GAMPER AND JACK RICE, ESQ.

SUBJECT: OFFER OF LEGAL ASSISTANCE AND DOCUMENTS

Protecting our state's farmland is a top priority of the California Farm Bureau Federation, and for generations the Williamson Act has helped to conserve our agricultural resources and protect our nation's food security. The enactment of SB 618 (Chapter 596, Statutes of 2011) on January 1, 2012, strengthens this farmland protection program by providing a significant incentive to encourage solar photovoltaic developers to locate their energy facilities on the least productive soils or land that is physically impaired.

In an effort to assist counties in the implementation of this important change in law, Farm Bureau's Governmental Affairs and Legal Services divisions have drafted a sample Solar-Use Easement Agreement and Model Resolution. These documents, along with a Summary Explanation of the new law, an implementation Checklist and a list of Frequently Asked Questions, are intended to serve as the legal foundation for your county's participation in this important new program.

By creating an alternative method for exiting a Williamson Act contract with the simultaneous creation of a Solar-Use Easement Agreement on marginally productive or physically impaired land, the Legislature sought to protect the integrity of the Williamson Act as well as our most productive agricultural land from conversion to utility-scale electrical power generation facilities. Many rural California counties are experiencing the equivalent of a 21st century land rush, as utility companies and independent solar developers seek entitlements to site solar PV projects, many of which are proposed on our most productive soils. As the global population grows relentlessly, protecting our food supply must become a much higher priority. SB 618 was intended to ensure that a short-term focus on renewable energy objectives would not come at the unnecessary expense of farmland needed to sustain a reliable food supply.

We hope your county will seriously consider the consequences of allowing prime farmland to be converted to utility-scale solar development when there are hundreds of thousands of acres of salt-impacted or drainage-impaired land that are available and suitable for this industrial land use.

It is our hope that the linked documents will assist you and your staff to implement the new law in an efficient and cost-effective manner.

cc: County Counsel
County Planning Director
County Farm Bureau

RESOLUTION OF ACCEPTANCE OF A SOLAR-USE EASEMENT

RESOLUTION OF COUNTY OF _____ TO ENTER INTO AN AGREEMENT TO REPLACE AGRICULTURAL LAND CONSERVATION CONTRACT NO. ____ [*OR* FARMLAND SECURITY ZONE CONTRACT NO. ____] WITH A SOLAR-USE EASEMENT

WHEREAS, pursuant to Title 5, Division 1, Part 1,Chapter 6.9 (commencing with Section 51190) of the Government Code (the Chapter) and Government Code section 51255.1, acounty and theowner of land in that county that is subject toan Agricultural Land Conservation Contract [*or* Farmland Security Zone Contract] may mutually agree to simultaneously rescind that contract and enter into a Solar-Use Easement as defined in the Chapter; and

WHEREAS, __[name]__ (Owner) ownsone or more parcels of land (the Property) in the County of _[name]__ (County) currently subject to Agricultural Land Conservation Contract No. ____ [*or* Farmland Security Zone Contract No. ____] (the Contract) restricting the use of the Property to agricultural production and compatible uses; and

WHEREAS,Owner has properly applied to County requesting County to agree to simultaneously rescind the Contract and enter into a Solar-Use Easement; and

WHEREAS, pursuant to Government Code section 51255.1, subdivision (c)(1), the County Assessor determined the current fair market value of the land as though it were free of the Contract restriction for purposes of calculating the rescission fee required; and

WHEREAS, pursuant to Government Code section 51255.1,subdivision (c)(2), on _____, 20__ the County Board of Supervisors determined and certified to the County Auditor that the amount of the rescission fee that Owner shall pay the County Treasurer upon rescission is $_____; and

WHEREAS, at the request of County, the California Department of Conservation, in consultation with the California Department of Food and Agriculture, determined the Contract is eligible for rescission under Government Code section 51255.1 and placement of the property in a Solar-Use Easement pursuant to Government Code section 51191; and

WHEREAS, Owner and County wish to agree to simultaneously rescind the Contract and enter into a Solar-Use Easement pursuant to the Chapter;

NOW, THEREFORE, BE IT RESOLVED:

1. County accepts and approves the Agreement to Rescind Agricultural Land Conservation Contract No. ____ [*or* Farmland Security Zone Contract No. ____] and to Create a Solar-Use Easement; Solar-Use Easement (the Agreement), attached to this resolution as Exhibit A and fully incorporated herein, which upon fulfillment of the conditions

contained in the Agreement shall constitute the instrument granting a Solar-Use Easement under which the County shall be provided with a right or interest, acquired pursuant totheChapter, restricting the use of the Property to the collection and distribution of solar energy for the generation of electricity, and any other incidental or subordinate agricultural or open-space uses, or other alternative renewable energy facilities consistent with the California Land Conservation Act of 1965, as amended, (the Williamson Act)in Title 5, Division 1, Part 1, Chapter 7 (commencing with section 51200) of the Government Code and County implementing procedures, and prohibiting any construction of improvements except those for which the right is expressly reserved in the Agreement and provided that those reservations would not be inconsistent with the purposes of theChapterand that would not be incompatible with the sole use of the Property for solar photovoltaic facilities.

2. The Chairperson of the Board of Supervisors of County is authorized and directed to execute the Agreement on behalf of County.

3. Upon fulfillment of the conditions of paragraph 1 of the Agreement, County shall:

   (a) Cause a copy of theAgreement to be recorded with the County Recorder and a copy to be filed with the County Assessor; and
   (b) Cause rescission fees collected pursuant to the Agreement to be forwarded to the State Controller.

ON THE MOTION OF Supervisor _____, seconded by Supervisor _____, the foregoing resolution was duly passed and adopted by the Board of Supervisors of the County of _____, State of California, this ____ day of _____, 20__, by the following vote:

Ayes:
Noes:
Absent:

_____
Chairman, Board of Supervisors

ATTEST

_____
Clerk, _____ County
Board of Supervisors

Sample Solar-Use Agreement/Easement

AGREEMENT TO RESCIND AGRICULTURAL LAND CONSERVATION CONTRACT NO. ____ [*OR* FARMLAND SECURITY ZONE CONTRACT NO. ____] AND TO CREATE A SOLAR-USE EASEMENT; SOLAR-USE EASEMENT

THIS AGREEMENT ("**Agreement**"),dated the ___ day of _____20___, is entered into by and between _____ ("**Owner**") and the COUNTY OF _____ ("**County**"), a political subdivision of the State of California (collectively "Parties").

Recitals

WHEREAS, Owner owns certain real property located within the County of _____, State of California, as further described in "Exhibit A" and attached hereto and incorporated herein by reference (the "**Property**"); and

WHEREAS, the Property is currently subject to Agricultural Land Conservation Contract No. ____ [*or* Farmland Security Zone Contract No. ____, Resolution No. ___] (the "**Contract**") restricting the use of the Property to agricultural production and compatible uses under the provisions of the California Land Conservation Act of 1965, as amended, (the "**Williamson Act**") in Title 5, Division 1, Part 1, Chapter 7 (commencing with section 51200) of the Government Code [or in accordance with the requirements of Government Code section 51296.1]; and

WHEREAS, theContract was entered into on_____, and at the expiration of each year of its term an additional year is automatically added to its term so that there is always a period of [10 *or* 20] years remaining on the Contract term until a notice of nonrenewal is served on the other party and recorded by the non-renewing party; and

WHEREAS, Owner desires to convert the use of the Property from agricultural production to solar photovoltaic facilities providing for the collection and distribution of solar energy for the generation of electricity; and

WHEREAS, pursuant to Government Code section 51255.1, subdivision (c)(1), the County Assessor determined the current fair market value of the Property as though it were free of the contractual restriction for the purpose of calculating the fee required to rescind the Contract; and

WHEREAS, pursuant to Government Code section 51255.1, subdivision (c)(2), the County Board of Supervisors determined and certified to the County Auditor that the amount of the rescission fee that the landowner shall pay the County Treasurer upon rescission is $_____; and

WHEREAS, at the request of County, the California Department of Conservation, in consultation with the California Department of Food and Agriculture, determined the Property is eligible for a Solar-Use Easement Conversion pursuant to Government Code section 51191; and

WHEREAS, Owner and County wish to agree to simultaneously rescind the Contract and enter into a Solar-Use Easement pursuant to Title 5, Division 1, Part 1, Chapter 6.9 (commencing with section 51190) of the Government Code (the "**Solar-Use Easement Chapter**");

THEREFORE, Owner and County agree as follows:

1. **RESCISSION OF CONTRACT FOR THE PURPOSE OF CREATING A SOLAR-USE EASEMENT**

   Subject to the terms and conditions of this Agreement, the Contract shall be rescinded so that Owner and County may simultaneously create a Solar-Use Easement (the"**Easement**") pursuant to the Solar-Use Easement Chapter.

   Rescission of the Contract and creation of the Easement shall automatically occur upon fulfillment of the following conditions:

   a. The execution by Owner anda public or investor-owned utility of a powerpurchase agreement involving the Property; and

   b. Payment by Owner to the County Treasurer of the rescission fee set forth in paragraph 8; and

   c. Provision by Owner of the financial assurance set forth in paragraph 13.

2. **TERM OF AGREEMENT**

   If the conditions set forth in paragraph 1 are fulfilled within 24 months of the date of this Agreement, then this Agreement shall continue until such time as the Property has been restored as required by paragraph 12.

   If the conditions set forth in paragraph 1 are not fulfilled within 24 months after the date of this Agreement, this Agreement shall terminate and the Property shall remain subject to the Contract.

3. **EFFECT OF AGREEMENT TO CREATE SOLAR-USE EASEMENT**

   Upon fulfillment of the conditions set forth in paragraph 1,this Agreement shall also constitute the instrument granting an Easement as provided in the Solar-Use Easement Chapter. The Easement so created shall provide County with a right or interest, acquired pursuant to the Solar-Use Easement Chapter, restricting the use of the Property as provided in this Agreement.

4. RESTRICTION ON USE OF PROPERTY

During the term of this Agreement, Owner shall use the Property only for the purposesof providing for the collection and distribution of solar energy for the generation of electricity, and any other incidental or subordinate agricultural or open-space uses, or other alternative renewable-energy facilities. Ownershall neitherconstruct norpermit the construction on the Property of any improvement except those for which the right is expressly reserved in this Agreement,as long as those reservations would be neither inconsistent with the purposes of the Solar-Use Easement Chapter nor incompatible with the sole use of the Property for solar photovoltaic facilities.

5. RECORDATION OF EASEMENT

Within 30 days afterthe creation of the Easement, County shall cause a copy of this Agreement to be recorded with the County Recorder and a copy to be filed with the County Assessor.

6. TERM OF EASEMENT

The Easement created pursuant to this Agreement shall remain in full force and effect for an initial term of [*at least10 or 20*]__ years from the date on which the Easement is recorded by County as set forth in paragraph 5. At the end of the term and upon completion of the requirements contained in this Agreement, including the restoration requirements set forth in paragraph 12, the Property shall be free of any restrictions imposed by this Agreement, and upon request by Owner and with the concurrence of the Board of Supervisors, all or a portion of the Property may return to coverage under a contract as provided under the Williamson Act.

[Optional – For self-renewing easement]

On each anniversary date of the creation of the Easement[*another annual date mayinstead be specified*], one year shall automatically be added to the initial term unless a notice of nonrenewal is given as provided in paragraph 7.

[*Optional – For self-renewing easement*]

7. NOTICE OF NONRENEWAL

a. A party desiring in any year not to renew the Easement on all or a portion of the Property shall giveto the other party written notice of nonrenewal of the Easement at least 90 days before the annual renewal date of the Easement. Unless written notice is given at least 90 days before the renewal date, the Easement shall be considered renewed as provided in paragraph 6.

b. Upon receipt by Owner from County of a written notice of nonrenewal, Owner may protest to Countyin writing the notice of nonrenewal. County may, at any time before the renewal date, withdraw the notice of nonrenewal.

c. If aparty giveswritten notice of nonrenewal of the Easement, the Easement shall remain in effect for the balance of the term of the Easement.

8. RESCISSION FEE

Upon fulfillment of the conditions set forth insubparagraph 1.a., Owner shall pay to the County Treasurer a rescission fee of $_____.

9. TERMINATION

If all or a portion of the Property subject to the Easement will no longer be used for solar photovoltaic facilities providing for the collection and distribution of solar energy for the generation of electricity,Owner may, pursuant to the provisions of Government Code section 51192.2,petition County to approve termination of the Easement as to the affected portion of the Property.

10. EXTINGUISHMENT

TheEasement created under this Agreement may, pursuant to the provisions of Government Code section 51192, be extinguishedon all or a portion of the Property only upon expiration of the term set forth in paragraph 6, or by nonrenewal, termination, or returning all or a portion of the Property to coverage under a contract as provided under theWilliamson Act.

11. RELEASE OF EASEMENT

Upon extinguishment of the Easement, County shall cause a releaseof Easement to be recorded with the County Recorder.

12. RESTORATION REQUIREMENTS

a. Except as provided in subparagraph b. of this paragraph, Owner shall,by the time the Easement is extinguished,restore the Property to the conditions that existed before the creationof the Easement. Such restoration shall include, but shall not be limited to, removal of all solar facilities from the Property, re-grading of the Property, and returning the physical characteristics of the Property's soil to those that existed when this Agreement was executed.

b. If the Easement is extinguished because of a notice of nonrenewal given by County, Owner shall restore the Property as described in subparagraph a. of this paragraph upon ceasing to use the Property as solar photovoltaic facilities for the purpose of providing for the collection and distribution of solar energy for the generation of electricity and shall continue to maintain the financial assurance described in paragraph 13until such restoration has been completed.

13. FINANCIAL ASSURANCE

Owner shall provide _[*e.g.,performance bond, letter of credit, corporate guarantee*]_____ as financial assurance thatthe restoration requirements set forth in paragraph 12will be met.

14. NO COMPENSATION

Owner shall receive from County no payment in consideration of Owner's obligations imposed under this Agreement, in that the consideration for the execution of this Agreement is the substantial benefit to be derived by Owner therefrom and the advantage that may accrue to Owner as a result of the rescission of the Contract.

15. SUCCESSORS IN INTEREST

This Agreementand the Easement and the restrictions,rights, duties and powers imposed or conferred hereunder respectively to Owner or County shall run with the Property and shall be binding upon the respective heirs, executors, administrators, trustees, successors, and assigns of Owner or County.

16. CONDEMNATION

When any action in eminent domain for the condemnation of the fee title of the Property is filed for a public improvement by a public agency or person, or whenever there is any such action or acquisition by the federal government, or any person, instrumentality or agency acting under authority or power of the federal government, this Agreement shall be terminated and the Easement extinguished as to the portion of the Property so condemned or acquired as of the date the action is filed.

17. NOTICES

Any notice required or permitted by this Agreement to be given by one party to the other shall be in writing and given either personally or by first-class mail, by depositing it with the United States Postal Service, postage prepaid,and addressed as follows:

TO OWNER:	**TO COUNTY:**
[*name*]	Board of Supervisors
[*address*]	County of _____[*name*]____
	[*address*]

or with such other address as a party may hereafter specify by a notice given in compliancewith this provision. A notice given by mail shall be deemed as having been given on the third business day after its deposit in the mail.

18. ENFORCEMENT

During the term of this Agreement, County shall not approve any use of the Property that is inconsistent with this Agreement or the Easement, and no building permit shall be issued for the construction on the Property of any structure inconsistent with this Agreement or the Easement. County shall seek, by appropriate proceedings, an injunction against any construction or other development or activity on the Property inconsistent with this Agreement or the Easement and shall seek an injunction requiring the removal of any such inconsistent structure.

19. INTEGRATION; AMENDMENTS

This Agreement states the entire understanding of the parties on its subject matter and cancels and replaces any prior understanding between them with respect thereto.Any amendment to this Agreement or the Easementshall be in writing and signed by theParties and be consistent with the terms of the Solar-Use Easement Chapter.

IN WITNESS WHEREOF,each party has caused this Agreement to be executed as of the date first set forth in this Agreement.

COUNTY OF _____

By: _____
Chairperson, Board of Supervisors

ACKNOWLEDGMENT

STATE OF CALIFORNIA)
) ss.
COUNTY OF _____)

On _____ (date), before me _____, Clerk of the Board of Supervisors, in and for said County and State, personally appeared _____, known to me to be the person who executed the within instrument on behalf of said political subdivision, and acknowledged to me that such County of _____ executed the same.

Clerk of the Board of Supervisors of
_____ County, State of California

_____

OWNER

_____

ACKNOWLEDGMENT

STATE OF CALIFORNIA)
) ss.
COUNTY OF _____)

On _____ (date), before me, _____, Notary Public, personally appeared _____, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

_____
Notary Public

June 29, 2012

Scott Cochran, Planner III
Tulare County Resource Management Agency
5961 South Mooney Blvd.
Visalia, CA 93277

Delivered via email to scochran@co.tulare.ca.us

RE: Revised Tulare Solar Center (PSP 11-062) Project Review – Consultation

Dear Mr. Cochran:

Thank you for the opportunity to provide initial project review comments for the proposed Tulare Solar Center solar project (Project). These comments are submitted on behalf of Defenders of Wildlife (Defenders) and our more than one million members and supporters in the United States, 200,000 of which reside in California.

Defenders is dedicated to protecting all wild animals and plants in their natural communities. To that end, Defenders employs science, public education and participation, media, legislative advocacy, litigation, and proactive on-the-ground solutions in order to prevent the extinction of species, associated loss of biological diversity, and habitat alteration and destruction.

Defenders strongly supports the emission reduction goals found in the Global Warming Solutions Act of 2006 (AB 32), including the development of renewable energy in California. However, we urge that in seeking to meet our renewable energy portfolio standard in California, project proponents design their projects in the most sustainable manner possible. This is essential to ensure that project approval moves forward expeditiously and in a manner that does not sacrifice our fragile landscapes and wildlife in the rush to meet our renewable energy goals.

As we transition toward a clean energy future, it is imperative for our future and the future of our wild places and wildlife that we strike a balance between addressing the near term impact of industrial-scale solar development with the long-term impacts of climate change on our biological diversity, fish and wildlife habitat, and natural landscapes. To ensure that the proper balance is achieved, we need smart planning for renewable power that avoids and minimizes adverse impacts on wildlife and lands with known high-resource values.

The proposed Project encompasses 1,144.23 acres and would generate up to a total of 80 MW of electricity from solar PV panels. The proposed Project site is generally vacant, previously disturbed agricultural land located approximately 4 miles south of the town of Ducor in the southern portion of Tulare County. The Porterville Highway (State Route 65) bisects the project site. Avenue 24 runs adjacent to the northern portion of the proposed Project site and Avenue 12 runs adjacent to the majority of the proposed Project site's southern boundary. The proposed Project site includes both Farmland of Local Importance and some Farmland of Statewide Importance. Surrounding land uses include orchards, dry land farming, grazing land, farmsteads and rural homesites. The southern portion of the proposed Project site is bisected by a seasonal drainage which appears to support seasonal vegetation which may provide additional habitat for special status species. Trees in the farmsteads and residential sites may also provide suitable nesting for special status species.

California Program Office
1303 J Street, Suite 270
Sacramento, CA 95814
Telephone 916-313-5800
Fax 916-313-5812
www.defenders.org/california

In general the proposed Project facilities would consist of the following project components:

- A solar field of PV panels mounted on steel and aluminum structures;
- An electrical collection system that aggregates the output from the PV panels and converts the electricity from direct current (DC) to alternating current (AC) via inverters;
- A substation where the electrical output is combined and its voltage is increased by transformers;
- An interconnection to the Southern California Edison's distribution or transmission system; and
- Internal infrastructure including roads and security fencing.

If built, the Project would entail the significant conversion of open lands to the light industrial nature of a solar power plant and could result in the loss of habitat and displacement of many species including numerous State and Federally listed species such as San Joaquin kit fox (*Vulpes macrotis mutica*), blunt-nosed leopard lizard (*Gambelia sila*), Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*), American badger (*Taxidea taxus*), burrowing owl (*Athene cunicularia*), tri-colored blackbird (*Agelaius tricolor*), western spadefoot toad (*Spea hammondii*), vernal pool fairy shrimp (*Branchinecta lynchi*), striped adobe-lily (*Fritillaria striata*), San Joaquin adobe sunburst (*Pseudobahia peirsonii*), San Joaquin woollythreads (*Monolopia congdonii*), and California jewel-flower (*Caulanthus californicus*) that have the potential to occur at the proposed Project site and/or the surrounding areas. The CEQA document should provide the following:

Science Based Baseline Biological Information and Analysis
The proposed Project is located within the known territory of numerous special status species. Protocol level surveys for these species must be completed. Additionally, the open, undisturbed lands located immediately adjacent to the proposed Project must be taken into consideration as the proposed Project site may be utilized by special status species occurring on those lands. The analysis, and any mitigation strategies, in the CEQA document must be based on these studies. Without protocol survey information, any impact analysis would be tenuous and incomplete and it would not be possible to ascertain if any proposed mitigation measures are appropriate. We recommend the applicant and the County engage in full consultation with the US Fish and Wildlife Service (FWS) and the California Department of Fish and Game (DFG) for guidance on impact assessment and mitigation and that the appropriate protocol level surveys be completed.

Whole Project Addressed
The CEQA document must address the whole of the project including the construction and/or upgrades to gen-tie lines, tap lines, transmission lines, telco lines, fiber optic line, and substations. The biological surveys must include those areas, both on and off-site, as well.

Compensatory Mitigation for Loss of Habitat
Habitat loss is the primary cause of San Joaquin Valley upland species endangerment (U.S. Fish & Wildlife 1998). It is essential that habitat for endangered and special status species in the Project area is protected to ensure survival and recovery of the species. To ensure habitat protection, land use must maintain or enhance the value of the land. The recommended approach for safeguarding such habitat is to protect land in large blocks whenever possible. This minimizes edge effects, increases the likelihood that ecosystem functions will remain intact and facilitates management.

The proposed Project site impacts habitat for a number of State and Federal threatened and endangered species. This loss of habitat would be significant and must be mitigated through the establishment of compensatory mitigation at prescribed ratios. Again, this mitigation should be determined through consultation with FWS and DFG.

Project Construction and Operation Protocols Must be Wildlife Friendly
The CEQA document, in consultation with FWS and DFG, must identify project construction and operation protocols to avoid and minimize impacts to wildlife. Protocols could include San Joaquin kit fox construction protocols, buffer zones, shielded lighting, and a prohibition on the use of rodenticides.

Security Fence Must be Wildlife Friendly
The proposed Project includes security fences around each phase's perimeter which would present a significant barrier to wildlife. The security fences must be designed to be wildlife friendly and allow safe passage of San Joaquin Valley kit fox and other species. In the event that chain-link fencing is used, the bottom of the fence

must be raised 5-7 inches off the ground, knuckled under along the entire perimeter of the Project, thereby permitting easy under-passage by foxes at any location. The fencing must not be electrified.

Cumulative Impacts
The proposed Project is just one of nearly two dozen solar projects proposed or permitted in Tulare County which will convert over 5,000 acres from agricultural and open lands to the light industrial land use of a utility scale solar power plant. Within the southern San Joaquin Valley region there are over 110 permitted or proposed solar projects which would convert over 42,000 acres to solar power plants. The cumulative loss of agricultural and habitat land must be addressed in the CEQA documents.

Conclusion
The proposed Tulare Solar Center project is well-intentioned but good intentions are not enough to overcome the potential permanent impacts this Project would have on the biological resources of the region. This area is home to some of the most imperiled species in California. We strongly encourage the applicant and the County to coordinate and work closely with DFG and FWS to incorporate the necessary protocol level surveys and appropriate strategies to identify, avoid, minimize and mitigate any impacts to biological resources from the proposed Project.

We look forward to reviewing the CEQA documents for this Project. Please include us in any notices for the proposed Project.

Thank you once again for the opportunity to provide comments on the Tulare Solar Center project and for considering our comments. If you have any questions, please me at (530) 902-1615 or via email at kate@kgconsulting.net.

Respectfully submitted,

Kate Kelly
Project Manager

Cc:
Gary Franzen, Wellhead Renewable Energy
Thomas Leeman, USFWS
Julie Vance, DFG

SOUTHERN CALIFORNIA
EDISON
An EDISON INTERNATIONAL Company

Bill DeLain
Region Manager
(559) 685-3213

Serving the San Joaquin Valley

June 30, 2012

Mr. Scott Cochran, Planner III
Tulare County Resource Management Agency
5961 South Mooney Boulevard
Visalia, CA 93277

Re: Project Review – Consultation Notice for Case No. PSP 11-062 (Tulare Solar Center/Wellhead Services, Inc.)

Dear Mr. Cochran:

Southern California Edison (SCE) appreciates being included in the Resource Management Agency's early consultation for the Tulare Solar Center, which is described as a proposal to construct and operate a solar photovoltaic (PV) generating facility comprising solar modules, inverters, access roads, and electric equipment. The project description also includes the construction of an onsite substation, overhead subtransmission and communication lines, underground electrical facilities, and a control equipment enclosure/operations and maintenance (OMB) building.

When SCE constructs or modifies its electric grid, SCE must meet permitting requirements of the California Public Utilities Commission (CPUC) and other governmental agencies having jurisdiction over resources. These permit requirements are most often subject to NEPA or CEQA under these permitting authorities. For this reason, SCE encourages local government lead agencies to include SCE's work scope for the required interconnection facilities in the CEQA document for the generation project during the lead agency's entitlement process. In so doing, SCE may be able to file applications for its required permits using the final CEQA document for the primary project. This may substantially reduce SCE's processing time to obtain the requisite permits. Alternatively, SCE may file permit applications with the CPUC and other governmental agencies through their respective NEPA/CEQA processes. This process, however, is generally longer than the aforementioned expedited permitting and may add as much as two years or longer to the SCE permitting process.

Prior to Tulare Solar Center, LLC submitting its Special Use Permit (PSP) application to the Tulare County Resource Management Agency, SCE worked with Wellhead Renewable Energy, LLC to confirm the preliminary interconnection plan, including line routes that would be potentially required to interconnect the proposed project to SCE's subtransmission system. Tulare Solar Center, LLC has incorporated this information into their application to Tulare County. SCE will continue to work with the Tulare Resource Management Agency and the Project Proponent throughout the CEQA process to finalize its interconnection information. Please keep SCE on your routing list for all applications and notices pertaining to this project.

Based on the project description, it appears the proposed project potentially impacts SCE's Vestal-Kern River #3 66-kilovolt (kV) Subtransmission Line. Therefore, SCE will need to undertake a comprehensive review of the detailed project plans, including, but not limited to, the project's grading plans, roadway improvement plans, and any other plans that affect SCE's easement or access roads. Please forward five (5) sets of project plans depicting SCE's facilities and its associated land rights to the following location for review:

Real Properties Department
Southern California Edison Company
2131 Walnut Grove Avenue, G.O.3 – Second Floor
Rosemead, CA 91770

Attached is an explanation of the renewable energy interconnection process for renewable generators interconnecting into SCE's California Independent System Operator (CAISO)-controlled transmission grid or into SCE's subtransmission and distribution system through SCE's Wholesale Distribution Access Tariff (WDAT). SCE hopes you find this information useful.

Please route any subsequent CEQA documents prepared for this project to SCE for our review. If you have any questions about this letter or SCE's interconnection process, please do not hesitate to contact me at (559) 685-3213.

Sincerely,

Bill Delain
Local Public Affairs Region Manager
Southern California Edison Company

Enclosure

Interconnection of Renewable Generation Projects into SCE's Electric Grid

Connecting into SCE's Transmission Grid

The California Independent System Operator (CAISO), with some isolated exceptions, controls SCE's transmission grid. An interconnection customer must file an application with CAISO in order to interconnect into the CAISO-controlled transmission grid, and the CAISO forwards the application to SCE if the proposed interconnection is within SCE's service territory. Once the application is filed, SCE and CAISO together conduct a series of interconnection studies to determine the impact to SCE's electrical system and if any upgrades to electrical facilities or additions are required to support interconnection. The CAISO manages the interconnection process, including the opening and closing of application windows, during which interconnection customers submit interconnection requests. New application windows open each year, with interconnection requests in the same cluster being studied as a group, with shared financial responsibility for network upgrades created by each study group.

Once the scope of work, costs, and schedule are determined, the generator is given the option of (1) entering into an interconnection agreement with SCE and CAISO for SCE to design, construct, install, operate, and maintain the required interconnection facilities, distribution upgrades or network upgrades; (2) withdrawing their interconnection request; or (3) requesting that the interconnection agreement is filed unexecuted at the Federal Energy Regulatory Commission ("FERC") due to disagreements with SCE or the CAISO on scope of work, costs, schedule or other issues related to the interconnection agreement. The customer finances the facility upgrades up-front with refunds given for any network upgrades as required under the CAISO tariff filed with FERC.

Connecting into SCE's Subtransmission or Distribution Grid

When a generating facility interconnects directly into SCE's subtransmission or distribution system, the interconnection customer applies for interconnection directly to SCE under SCE's Wholesale Distribution Access Tariff (WDAT). Wholesale generators are interconnected under FERC's rules and tariffs, while retail generators are connected under the California Public Utilities Commission's (CPUC's) Rule 21.

Under SCE's WDAT, SCE conducts interconnection studies to determine the impact to SCE's electrical system and whether any new and/or upgraded facilities are necessary to support the interconnection. Once the scope of work, costs, and schedule are determined, the generator is given the option of (1) entering into an interconnection agreement with SCE for SCE to design, construct, install, operate, and maintain the required interconnection facilities, distribution upgrades or network upgrades; (2) withdrawing their interconnection request; or (3) requesting that the interconnection agreement is filed unexecuted at the Federal Energy Regulatory Commission ("FERC") due to disagreements with SCE on scope of work, costs, schedule or other issues related to the interconnection agreement. If the generating facility requires network upgrades

(on the CAISO transmission system), the customer finances the upgrades up-front with refunds, for any required network upgrades, similar to transmission-level interconnections. If the facility requires interconnection or distribution upgrades, the customer pays for the facilities or upgrades without reimbursement. The WDAT and Rule 21 interconnection processes generally follow similar application windows and study schedules as the CAISO process.

DEPARTMENT OF FISH AND GAME
Central Region
1234 East Shaw Avenue
Fresno, California 93710
(559) 243-4005
http://www.dfg.ca.gov

CHARLTON H. BONHAM, Director

July 19, 2012

Scott Cochran
Tulare County Resource Management Agency
5961 South Mooney Boulevard
Visalia, California 93277

Subject: Case No. PSP 11-062, Revised Site Plan
Tulare Solar Center, LLC
APNs 339-100-007; 339-110-006; 339-140-001, 008, 010

Dear Mr. Cochran:

The Department of Fish and Game (Department) has reviewed the Revised Site Plan for the above referenced Special Use Permit (PSP) for the Tulare Solar Center, LLC Project (Project). Approval of the Project would allow the construction and operation of an unspecified megawatt solar photovoltaic (PV) electrical generation facility on a 1,144-acre site. The Project will consist of installing/constructing solar modules, inverters, access roads, a parking area, electrical equipment, and a meteorological tower. The Project also includes constructing at least one on-site substation, and an operation and maintenance building, and installing subsurface electrical facilities and above-ground transmission and communication lines (up to 2.25 miles) plus upgrading an existing off-site sub-transmission line. The Project site is located east and west of State Route 65, south of Avenue 24, and north of Avenue 8 and is approximately 4 miles south of Ducor in an unincorporated area of Tulare County, California.

According to the PSP Application, the Project site has been in agricultural row crop production but is currently fallow. Depending on the length of time the site has been fallow, the site may have had sufficient opportunity to reestablish to more natural conditions that may support special-status wildlife species. In addition, agricultural activities do not preclude the use of agricultural lands by special-status wildlife species. Because biological studies have not yet been completed for the Project, many of the following comments regarding potential wildlife impacts apply generically to lands in active irrigated agricultural production in the Project site vicinity.

The Department recommends completing biological studies to establish a baseline and facilitate informed decision making for the purpose of completing environmental review and permitting under the California Environmental Quality Act (CEQA) process. The biological studies that the Department recommends include: a burrowing owl (*Athene cunicularia*) survey, a survey for potential San Joaquin kit fox (*Vulpes macrotis mutica*) (SJKF) dens or other sign, a survey for Swainson's hawk (*Buteo swainsoni*) nest sites within 0.5 mile of the Project site, and surveys for special-status plant species, and mapping of surface water features. As a follow-up to these studies, the Department recommends the County complete analyses that consider the cumulative effects on wildlife from this Project and any other solar projects or other proposed

development projects that are in the vicinity. These studies would determine whether the Project is likely to result in significant impacts to these species, and provide a basis for determining if the proposed mitigation measures (included in the CEQA document prepared for this Project) would reduce potential impacts to less than significant levels.

Additionally, the Department recommends that the Project proponent consult with the United States Fish and Wildlife Service (USFWS), which administers the federal Endangered Species Act (ESA), well in advance of Project implementation regarding potential impacts to SJKF; San Joaquin adobe sunburst (*Pseudobahia* peirsonii) and the California jewelflower (*Caulanthus californicus*),.

Based on the limited biological information that the Department has about the Project site at this time, we recommend Tulare County (Lead Agency) require the following measures be implemented:

- Avoid Project-related activities within 0.5 mile of active Swainson's hawk nests from March 1 through September 15.

- Because Swainson's hawk nests are known within 10 miles of the Project site, require habitat mitigation as recommended in DFG's "Staff Report regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California" (1994 Staff Report), found at http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html.

- Avoid burrowing owl burrows as indicated in the table on page 9 of the Department's "Staff Report on Burrowing Owl Mitigation" (DFG, 2012) found at http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html#Birds.

- Require habitat compensation if burrowing owls are present on the Project site following the recommendations contained in the 2012 "Staff Report on Burrowing Owl Mitigation".

- Implement the January 2011 "U.S. Fish and Wildlife Service Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance" (Standard Recommendations), found at http://www.google.com/url?q=http://www.fws.gov/sacramento/ES/Survey-Protocols-Guidelines/Documents.

- Maintain habitat permeability for SJKF by installing only permeable perimeter fencing.

- Require surveys be conducted for special-status plant species according to the November, 2009 "Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities" found at http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html#Plants.

- Avoid special-status plant species by 50 feet. Increase this buffer when topography, hydrology, soil type, or associated plant communities warrant such an increase.
- Avoid water surface features by 50 feet. Increase this buffer when topography, hydrology, soil type, or associated plant communities warrant such an increase.
- Prevent bird entrapment and death by capping all vertical pipes associated with the solar panels and fencing as they are installed.

The following is a discussion of the Department's potential jurisdiction for this Project and more specific comments on the PSP.

Department Jurisdiction

CEQA and California Endangered Species Act (CESA) Authority: The Department is a Trustee Agency for fish and wildlife resources with the responsibility under CEQA for commenting on projects that could impact fish and wildlife resources. In this role, the Department is responsible for providing, as available, biological expertise to review and comment on environmental documents and impacts arising from project activities. Pursuant to Fish and Game Code Section 1802, the Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species.

The Department is a Responsible Agency when a subsequent permit or other type of discretionary approval is required from the Department, such as an Incidental Take Permit (ITP), pursuant to CESA (Fish and Game Code Section 2081), or a Lake or Streambed Alteration Agreement (LSAA) issued under Fish and Game Code sections1600 *et seq.*

As proposed, the Project may warrant an ITP for "take" of Swainson's hawk, which is listed as threatened pursuant to CESA; San Joaquin kit fox, which is listed as threatened pursuant to CESA and endangered pursuant to the ESA; San Joaquin adobe sunburst, which is listed as endangered pursuant to CESA and threatened pursuant ESA; and the California jewelflower, which is listed as endangered pursuant to CESA and ESA. Sufficient information was not provided in the PSP documentation to determine whether take authorizations for these species are warranted during construction of the Project or for operation and maintenance of the facility once built.

A previously submitted Operational Statement identified three watercourses located on the Project site. Two of these watercourses had previously been farmed, but the third has been avoided. The PSP Application submitted for this Project, which consists of greater acreage than the previously submitted Operational Statement, does not identify on-site watercourses, so (based on the previously submitted Operational Statement) the Department assumes there are three existing on-site watercourses.

Sufficient information was not provided in the PSP Application to determine whether an LSAA would be warranted. However, according to aerial photographs and the previously submitted Operational Statement, it appears as though solar modules are proposed to be placed within on-site watercourses for all four alternatives. As implementation of the Project would substantially alter the bed, bank, or channel, or associated vegetation of on-site watercourses, the Project applicant should submit an LSAA Notification to the Department prior to implementing such activities.

The Department's issuance of an ITP and/or an LSAA is also considered a "project" subject to CEQA (CEQA Guidelines Section 15378). The Department typically relies on the Lead Agency's CEQA compliance to make findings pursuant to CEQA Guidelines Section 15091. For the Lead Agency's CEQA document to suffice for CESA ITP issuance, it must fully describe the potential Project-related impacts to State-listed species, analyze potential impacts of the entire Project including private and public land components, and commit to measures to avoid or minimize, and fully mitigate impacts to these resources. This means that the Project must not diminish the overall populations and ranges of State-listed species. The Department may not be able to issue an ITP by relying on an Environmental Impact Report (EIR) containing a Statement of Overriding Considerations when impacts to a State-listed species are not mitigated to less than significant levels.

For the Lead Agency's CEQA document to suffice for LSAA issuance, it must fully describe the potential Project-related impacts to on-site watercourses and other biological resources such as riparian vegetation, other vegetative cover, and wildlife species associated with the watercourses, analyze potential impacts to on-site watercourses, and commit to measures to avoid, minimize, or mitigate impacts to these resources to levels less than significant.

If the CEQA document completed for this Project does not include mitigation measures to reduce impacts to State-listed species or watercourses to less than significant levels, or if it does not describe and analyze all components of the Project (including those on private land), the Department, as a result, may need to act as the CEQA Lead Agency and complete a subsequent CEQA document to support issuance of an ITP or LSAA. This could significantly delay ITP/LSAA issuance and, consequently, Project implementation.

Specific Comments on the PSP

Burrowing Owl: Burrowing owl may occur on or adjacent to the Project site. The Department recommends following the 1993 California Burrowing Owl Consortium survey methods to establish the status of burrowing owl on and next to the Project site and to provide for a CEQA baseline. The Department also recommends the CEQA impact assessment and take avoidance follow the Department's 2012 staff report recommendations. Both of these documents are found at http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html. To be effective, habitat compensation and enhancement should be of sufficient scale to provide for the number of burrowing owls impacted and to replace the extent of habitat displaced by the Project.

Consistent with accepted protocols, burrowing owl and burrow surveys should be conducted during both the wintering and nesting seasons, unless the species is detected during the first survey. The winter survey should be conducted between December 1 and January 31 (when wintering owls are most likely to be present) and the nesting season survey should be conducted between April 15 and July 15 (the peak of the breeding season). Surveys conducted from two hours before sunset to one hour after, or from one hour before to two hours after sunrise, are also preferable. If the Project site contains potential burrowing owl burrows, the Department recommends that a qualified biologist conduct a survey no more than 30 days before the onset of any ground-disturbing activities.

The Department recommends that projects avoid occupied burrows during the February through August breeding season with a minimum 650-foot no-construction buffer zone, unless a Tulare County and Department-approved biologist verifies through non-invasive methods that either 1) the birds have not begun egg laying and incubation; or 2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival. During the non-breeding season, burrows should be avoided by at least 160 feet. Not implementing this buffer zone could cause adult burrowing owls to abandon the nest, cause eggs or young to be directly impacted (crushed), and/or result in reproductive failure. Impacts of this nature would likely constitute violations of Fish and Game Code sections 3503, 3503.5, 3513, and the International Migratory Bird Treaty Act (MBTA).

If burrowing owls occupy the site during the non-breeding season, a passive relocation effort may be instituted. The Department recommends the CEQA document prepared for this Project describe methods that would be used to evict owls from burrows along with a monitoring program to ensure that evicted individuals are using a relocation site. The Department's 2012 Staff Report on Burrowing Owl Mitigation also recommends that foraging habitat be acquired, permanently protected, and managed/funded in perpetuity to offset the loss of foraging and burrowing habitat on project sites.

Swainson's Hawk: Field surveys for Swainson's hawk nest locations and an assessment of foraging habitat quality are warranted to determine the potential impacts to Swainson's hawk from this Project and other projects in the vicinity. The Department recommends implementing the survey methodology developed by the Swainson's Hawk Technical Advisory Committee, "Recommended Timing and Methodology for Swainson's Hawks Nesting Surveys in California's Central Valley," found at http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html#Birds to determine if Swainson's hawks are nesting within 0.5 mile of the site.

Application of foraging habitat mitigation depends on an understanding of the site's forage value and relationship to active nests. The Project warrants habitat compensation to offset potentially significant impacts to Swainson's hawk foraging habitat since the Project site has been dry-farmed or fallowed land. The Department's habitat loss mitigation recommendations are in the aforementioned 1994 Staff Report. The Department recommends that the Lead Agency require as a mitigation measure in the CEQA document that the applicant mitigate for Swainson's hawk foraging habitat loss if it is determined that Swainson's hawks are nesting

within 10 miles of the Project site and because the Project site contains suitable foraging habitat. .

Additionally, the Department recommends that the CEQA document include an assessment of the potential for cumulative impacts to Swainson's hawk from the Project and the other nearby projects, based on Swainson's hawk nest surveys and an assessment of available foraging habitat relative to any active nest sites.

The Department also recommends that the Lead Agency, require that active Swainson's hawk nests be buffered from construction activities by at least 0.5 mile during the nesting season (March 1 through September 15) to reduce the potential for take of Swainson's hawks. If pre-construction surveys detect a Swainson's hawk nest within 0.5 mile of the Project site, we recommend that the Lead Agency require the Project proponent to delay all construction activities within 0.5 mile of the nest and contact the Department immediately to determine how to implement the Project and avoid take. If take cannot be avoided, an ITP would be warranted to remain in compliance with CESA.

San Joaquin Kit Fox: Based on aerial photographs, the Project site appears to include some lower-quality and some moderate-quality habitat for SJKF. However, this species does forage in intensively managed agricultural settings. The PSP documentation does not present survey results or other data relevant to SJKF. As such, the Department can make only conservative recommendations to help ensure significant impacts to and take of SJKF can be avoided. At a minimum, we recommend a search for potential dens or other SJKF sign to establish a baseline for impact analysis and to determine the appropriate mitigation measures to avoid take.

There is potential for SJKF to be in dens on the Project site when construction activities occur. To minimize and avoid impacts to SJKF, the Department recommends implementing the 2012 USFWS Standard Recommendations discussed in paragraph 5, bullet 5 above. If take of SJKF is unavoidable, the applicant would be warranted to obtain take authorization from the Department and the USFWS to be in compliance with CESA and ESA.

Permeable Fencing: To further minimize potential impacts to SJKF, the Department recommends maintaining SJKF permeability or passage through the Project site, a consideration of greater importance on this relatively small Project site because of the potential cumulative impacts resulting from this and other solar projects in the vicinity. Constructing perimeter chain link fences that would allow for SJKF passage would enable potential SJKF movement through the area and reduce potential impacts to SJKF from fragmentation of their habitat. Several solar projects within SJKF range are constructing perimeter fences with the bottom strand at a height that allow free movement of SJKF (5 to 7 inches) and knuckled along the bottom; this is a measure capable of successful implementation.

Vegetation and Rodent Control: The PSP Application refers to the maintenance of vegetation as necessary to minimize noxious weeds, pests, and/or fire hazards, including potential grazing by sheep. The Department encourages maintaining some vegetation cover for species traversing or otherwise using the Project site and we strongly discourage the use of rodenticides

and other pesticides because they have the potential to directly and indirectly impact State-listed species such as the San Joaquin kit fox and Swainson's hawk, which may result in take of the species and would warrant acquisition of an ITP. If rodent pests are an issue, the Department encourages the use of live traps for pest rodent control. The traps should be sized such that inadvertent trapping of SJKF does not occur.

General Bird Protection: Vertical tubes such as solar mounts and chain link fencing poles can result in the entrapment and death of a variety of bird species. The Department recommends that all hollow solar mount poles and fence poles be capped at the time they are installed to prevent the entrapment and death of birds.

Nesting Bird Protection: Ground nesting birds may occur on the Project site and shrub and tree nesting species may occur in the vicinity of the Project site. The Department recommends restricting Project-related activities to September 16 to December 31, outside the normal bird breeding season. If Project-related activities must occur during the normal bird breeding season (January 1 through September 15), the Department recommends that a qualified biologist conduct nesting bird surveys and, if found, implementing a no-disturbance buffer of 0.50 miles for listed bird species, 500 feet for non-listed raptor species, and 250 feet for non-listed, non-raptor migratory bird species until the young has fledged and are no longer reliant on the parents for survival. These measures are recommended to remain in compliance with Fish and Game Code sections 3503 (regarding unlawful take, possession, or needless destruction of the nest or eggs of any bird), 3503.5 (regarding take, possession, or destruction of any birds-of-prey or their nests or eggs), and 3513 (regarding unlawful take or possession of any migratory bird) and the MBTA.

Special-Status Plant Species: State-listed and other special-status plant species are known to occur in the Project site vicinity. The Department recommends that prior to allowing Project-related activities to occur, that the Lead Agency require a qualified botanist conduct surveys for special-status plants during the appropriate bloom periods and using reference populations where available. Surveys should follow the Department's 2009 Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities. The protocol can be found at http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html#Plants. If State-listed species are found, the Department is available for consultation with the Project applicant to determine appropriate take avoidance measures. If avoidance is not feasible, an ITP could be warranted.

State Clearinghouse Circulation Requirement: Section 15025 of the CEQA Guidelines stipulates that Draft EIRs and Negative Declarations (including Mitigated Negative Declarations) shall be submitted to the State Clearinghouse when "a state agency is a Responsible Agency, Trustee Agency, or otherwise has jurisdiction by law with respect to the project." The Department is a Trustee Agency on this Project because the Project has the potential to affect wildlife; the Department would be a Responsible Agency on this Project if the Department were to prepare an LSAA or an ITP for San Joaquin kit fox, Swainson's hawk, or listed plant species. Section 15025 further stipulates that EIRs and Negative Declarations for projects of statewide, regional, or areawide significance shall be submitted to the State Clearinghouse. Section 15026

defines such projects as those that would substantially affect habitats of endangered, rare, and threatened species or that would result in cancellation of Willamson Act contracts. The Department believes there is potential for substantial affects to endangered, rare, or threatened species and their habitats as discussed in this letter; therefore, the Lead Agency should submit the CEQA document prepared for this Project to the State Clearinghouse.

Thank you for the opportunity to provide input on the PSP for this renewable energy project. If you have any questions regarding these comments, please contact Lisa Gymer, Staff Environmental Scientist, at the address on this letterhead, by telephone at (559) 243-4014, extension 238, or by electronic mail at lgymer@dfg.ca.gov.

Sincerely,

for Jeffrey R. Single, Ph.D.
Regional Manager

cc: Thomas Leeman
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Lori Bono, Central Region

RESOURCE MANAGEMENT AGENCY

INTEROFFICE MEMORANDUM

TO: Scott Cochran, Project Planner

FROM: Kevin Rivel, Tulare County Fire Inspector – Kevin Rivel

SUBJECT: Case No. PSP 11-067

The Fire Department has ~~no~~ THE FOLLOWING recommendations in response to this item.

1. Fire Department requires a Knox box to be installed at an approved location to permit entry to the site.
2. Access gates shall be set back 30 feet from the roadway for fire apparatus access.
3. All combustible vegetation shall be removed from the site and Tulare County fire Department approved measures taken to prevent the accumulation of combustible vegetation that would create a fire hazard.
4. Access roads of an all-weather surface shall be provided so that no portions of the photovoltaic panels are farther than 155 feet from a fire apparatus access road.
5. Access roads shall be a minimum of 20 feet in width (non-obstructed), with a maintained 13 feet 6 inches vertical clearance.
6. 20-foot fire access roads shall be constructed at intervals of no greater than 310 feet.
7. Applicant shall be responsible for training fire personnel of facility operations, hazards and emergency procedures for shutting down the operation.
8. Posted address visible from roadway, min. 4 inch numbers.
9. If buildings are proposed, National Fire Protection Agency (NFPA) 1142 standards for rural water supplies shall be required.

If you have any questions please call AL MILER @ 624-7058

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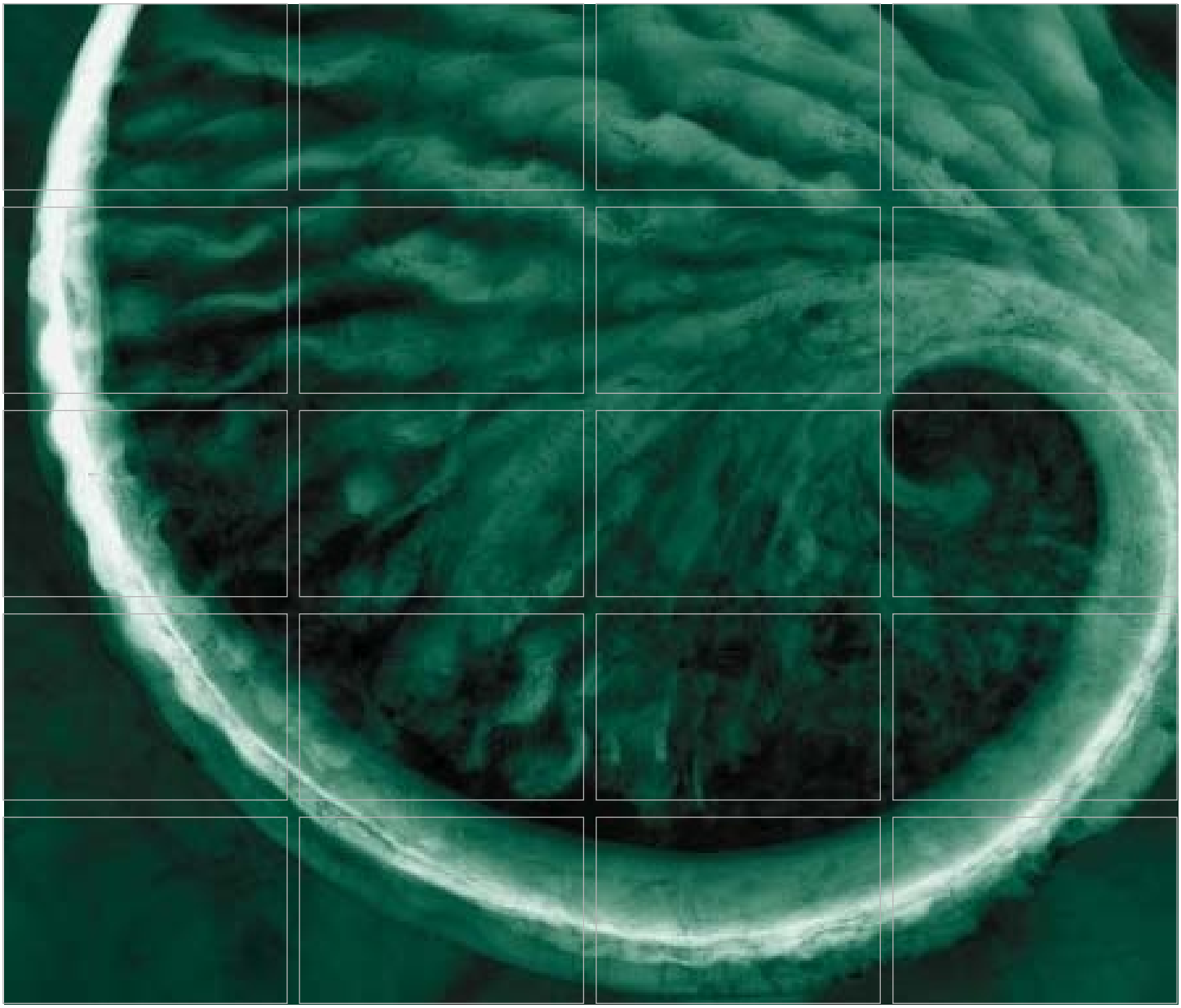
Appendix B

Air Quality and Climate Change Impact Assessment for Tulare Solar Center



Air Quality & Climate Change Impact Assessment for the Tulare Solar Center

May 2013

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Prepared for:
Wellhead Renewable Energy

Delivering sustainable solutions in a more competitive world

ERM

Wellhead Renewable Energy

Air Quality & Climate Change

Impact Assessment
Tulare Solar Center

May 2013

Project No. 0172775-090

Scott Weaver
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1.0 INTRODUCTION

Wellhead Renewable Energy, LLC (WRE) develops, and is an affiliate of, energy companies that own and operate power production and distribution facilities across California. WRE's affiliate, Tulare Solar Center LLC, is proposing to construct, own, and operate an 80 megawatt (MW) solar photovoltaic (PV) generating facility (Tulare Solar Center or the "Project") on a 1,144 acre site near the community of Ducor in unincorporated Tulare County, California. The Project will be electrically connected to the California Independent System Operator (CAISO)-controlled grid, with its electricity sold to one of the State's Investor Owned Utilities (IOUs), or a CAISO market participant.

The Project will be located on historically disturbed agricultural lands in an unincorporated area of Tulare County, California. The project site is located along Highway 65, approximately 3.5 miles north of Highway 155 (in Kern County, and also known as Garces Highway) or 4 miles south of Ducor. Porterville Highway (State Route 65) bisects the Project Site in the north to south direction.

The project site comprises seven parcels, APNs 339-100-07, 339-110-06, 339-110-10, 339-110-16, 339-140-01, 339-140-08, and 339-140-010, which are all zoned Exclusive Agricultural (AE-40) and are designated Rural Valley Lands under the Tulare County General Plan. The Project is consistent with Section 16 of Ordinance 352, as amended, allowing solar PV electric generating facilities within agricultural zoned lands, subject to a Special Use Permit and Developer Agreement.

The Project site consists of undeveloped land that is zoned for agriculture, and is primarily designated as Farmland of Local Importance by the California Farmland Mapping and Monitoring Program (FMMP), with the exception of one 20-acre parcel which has a Lands of Statewide Importance designation. All Project lands are contracted under the Williamson Act.

The site topography ranges from flat to gently sloped, and although APN 339-140-01 contains site improvements, including a farm house, a shop, a storage building, and related servicing utilities, the Project will not impact these improved areas. Rural unpaved roads run adjacent to southern, western and eastern portions of the Project Site. A paved highway (Porterville Highway or State Route 65) bisects the site at the Site's east-west mid-point, a graveled county road (Avenue 24) runs adjacent to the northern portion, and an unpaved road (Avenue 12) runs adjacent to the majority of the site's southern boundary. The site is bordered by undeveloped lands and agricultural fields.

This report presents an assessment of the potential air quality and climate change impacts associated with the construction and operation of the proposed Project. This report has been prepared in a manner consistent with the San Joaquin Valley Air Pollution Control District (SJVAPCD or District) Indirect Source Review (ISR) requirements and the District's policy for air quality impact analyses prepared for the California Environmental Quality Act (CEQA).

2.0 *APPLICABLE REGULATIONS, PLANS, AND STANDARDS*

2.1 *Federal Regulations*

Federal Clean Air Act: The Federal Clean Air Act (CAA) was first enacted in 1955 and has been amended numerous times in subsequent years, with the most recent amendments in 1990. At the federal level, the United States Environmental Protection Agency (USEPA) is responsible for implementation of some portions of the CAA (e.g., certain mobile source and other requirements). Other portions of the CAA (e.g., stationary source requirements) are implemented by state and local agencies.

The CAA establishes federal air quality standards, known as National Ambient Air Quality Standards (NAAQS) and specifies future dates for achieving compliance. The CAA also mandates that the state submit and implement a State Implementation Plan (SIP) for areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met. The Project site is located within the San Joaquin Valley Air Basin (Basin), which is an area designated as non-attainment as the area does not meet the NAAQS for certain pollutants regulated under the CAA.

2.2 *State Regulations*

California Clean Air Act: The California Clean Air Act (CCAA), signed into law in 1988, requires all areas of the State to achieve and maintain the California Ambient Air Quality Standards (CAAQS) by the earliest practical date. In general, the California standards are more health protective than the corresponding NAAQS.

California Air Resources Board Airborne Toxic Control Measures: In 2004, CARB adopted an Airborne Toxic Control Measure (ATCM) to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter (DPM) and other toxic air contaminants (TACs). As specified in 13 California Code of Regulations (CCR) Chapter 10 §2485, the ATCM applies to diesel-fueled commercial vehicles with gross vehicle weight ratings greater than 10,000 pounds that are licensed to operate on highways, regardless of where they are registered. This measure does not allow diesel-fueled commercial vehicles to idle for more than five minutes.

In addition to limiting exhaust from idling trucks, CARB has established emission standards for off-road diesel construction equipment such as bulldozers, loaders, backhoes and forklifts, as well as many other self-propelled off-road diesel vehicles. The regulation adopted by the CARB on July 26, 2007 aims to reduce emissions by installation of diesel soot filters and encourages the replacement of older, dirtier engines with newer emission controlled models.

The proposed Project will likely require the use of heavy-duty diesel vehicles during the construction phase.

2.3 Local Regulations & Conditions

San Joaquin Valley APCD: The District is the primary regulatory agency with responsibility for air quality in the San Joaquin Valley. District Rules and Plans are applicable to projects under the jurisdiction of the SJVAPCD. The project will be subject to requirements of SJVAPCD Rule 9510 – Indirect Source Review (ISR) and Regulation VIII Fugitive PM10 Prohibition. The Air Impact Assessment for ISR project #C-20120159 was approved by the SJVAPCD on August 8, 2012.

Additionally, several CAA requirements are implemented by the District as part of the SIP. The following apply to the proposed Project.

- Regional Air Quality Management Plan
- 2012 $PM_{2.5}$ Plan
- 2007 8-Hour Ozone Plan
- 2007 PM_{10} Maintenance Plan
- Rule 9510 Indirect Source Review
- Regulation VIII Fugitive PM_{10} Prohibitions

The Project site is located within San Joaquin Valley Air Basin (Basin), which is a non-attainment area since the Basin does not meet the NAAQS for certain pollutants regulated under the CAA.

Table 1 below shows the attainment status of the Basin for air pollutants. Nonattainment designations are categorized into seven levels of severity: (1) basic, (2) marginal, (3) moderate, (4) serious, (5) severe-15, (6) severe-17, and (7) extreme.

Table 1: San Joaquin Valley Air Basin Attainment Status

Pollutant	Designation/Classification	
	Federal Standards	State Standards
Ozone - One hour	No Federal Standard	Nonattainment/Severe
Ozone - Eight hour	Nonattainment/Extreme	Nonattainment
PM 10	Attainment	Nonattainment
PM 2.5	Nonattainment	Nonattainment
Carbon Monoxide	Attainment/Unclassified	Attainment/Unclassified
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Sulfur Dioxide	Attainment/Unclassified	Attainment
Lead (Particulate)	No Designation/Classification	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment

2.4 *Sensitive Receptors*

For the purposes of a CEQA analysis, the SJVAPCD considers a sensitive receptor to be a receptor such as residence, hospital, or convalescent facility where it is possible that an individual could remain for 24 hours. Commercial and industrial facilities are not included in the definition of sensitive receptor because employees do not remain onsite for a full 24 hours, but are typically present for shorter periods of time, such as eight hours.

The project is located south of the city of Ducor, California on historically disturbed agricultural lands which are not in proximity of schools or hospitals. The closest sensitive receptors are a few homes located along State Highway 65, adjacent to the project boundary.

2.5 *Significance Criteria*

Based on CEQA Guidelines Appendix G, a project would cause a significant impact on air quality if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment;
- Expose sensitive receptors to substantial pollutant concentrations; or;
- Create objectionable odors affecting a substantial number of people.

Based on SJVAPCD Policy APR 2010, CEQA Implementation Policy, the SJVAPCD CEQA significance thresholds are as follows:

- NO_x 10 tons/year
- VOC 10 tons/year
- PM_{10} 15 tons/year
- SO_x 27.4 tons/year

These thresholds apply to both construction emissions and operational emissions associated with a Project.

Based on SJVAPCD Policy APR 2015, Zero Equivalency Policy for Greenhouse Gases, the CEQA significance threshold for greenhouse gases (GHG) is 230 metric tons per year carbon dioxide equivalent (CO_2e). This threshold applies to emissions associated with the operation of a Project.

3.0 *PROJECT IMPACTS*

3.1 *Construction Emissions*

The following construction analysis is a conservative representation of the amount of construction activity needed to build an 80 MW PV Solar Farm. Construction may take up to several years over multiple phases, or as little as a single 12 month construction period under the most aggressive schedule. For the purposes of CEQA this analysis considers the most aggressive schedule to establish a worst-case air quality analysis. As a

result, the assumptions made for this analysis may be different than assumptions made under other sections of this EIR.

Off-site construction emissions will be generated from the delivery of construction materials via heavy duty trucks, and construction worker trips in personal vehicles. On-site construction emissions will be generated by mobile and stationary source equipment used for site preparation and grading, foundations, installation of the PV modules, and construction of transmission system interconnection facilities. Use of on-site materials is assumed for site grading, with allowance for minor quantities of engineered fill materials for foundation preparation included in the broad assumptions above.

For this analysis, construction of the Project is assumed to begin in 2013 and last approximately twelve months which would represent the most compressed construction schedule. The Project is estimated to generate approximately 90 delivery heavy duty truck trips, 3 vendor medium duty truck trips and an average of 195 worker trips on a daily basis. It is assumed that each of the delivery, vendor, and worker trips will include 50 miles of travel offsite. It is also assumed that the delivery and vendor trips will include 1 mile of travel onsite. Construction activities are expected to occur 5 days per week for 52 weeks, or 260 days total.

Consistent with the District's Indirect Source Review (ISR) requirements and the District policy on CEQA compliance for review of PV solar projects, the construction emissions from the Project have been estimated using the District's Solar Project Calculator including URBEMIS2007 information and updates for EMFAC2011, OFFROAD2011, as well as the Sacramento Metropolitan Air Quality Management District's Construction Mitigation Calculator Model, Version 6.1.1.[1] Based on these models, criteria pollutant emissions from Project construction are shown as Un-Mitigated Construction Emissions in Table 2A and Mitigated Construction Emissions in Table 2B below. Complete calculation spreadsheets are provided in Appendix A to this document.

[1] Per verbal conversations with J. Willis at SJVAPCD ISR division (10/11/12 and 5/9/13), SJVAPCD directed use of EMFAC2011, URBEMIS2007, OFFROAD2011, and the SJVAPCD ISR Solar Project Calculator to estimate criteria pollutant emissions under CEQA rather than CalEEMod. The approach was also confirmed with H. Guerra at the Tulare County Resources Management Agency (10/11/12).

Table 2A: Unmitigated Construction Emissions

Construction Emissions	Pollutants			
	ROG	NOx	SOx	PM10
Threshold of Significance (tpy)	10	10	27.4	15
Un-Mitigated Construction Emissions Totals (tpy)	2.5	38.4	0.07	1.4
Exceed Threshold?	No	Yes	No	No

Unmitigated construction emissions are expected to be below applicable significance thresholds for each pollutant except NO_X. As shown in Table 2A, NO_X emissions exceed the CEQA significance threshold of 10 tons per year established by the District.

The District ISR Rule (Rule 9510) and the Administrative ISR Fee Rule (Rule 3180) are the result of state requirements outlined in the California Health and Safety Code, Section 40604 and the SIP. The purpose of the District's ISR program is to reduce emissions of NO_X and PM_{10} from new development projects. These ISR requirements apply to the Tulare Solar Center project and require mitigation measures to achieve reductions of NO_X and PM_{10} emissions.

Under Rule 9510, construction vehicle exhaust emissions are required to be mitigated by 20% for NO_X and 45% for PM_{10} as compared to the California Air Resource Board (CARB) state-wide averages. Achieving these reductions is a regulatory requirement, and will be achieved either through project mitigation measures and/or by fees paid by the applicant to the District to administer emission reduction measures that meet the Rule 9510 requirements.

One mitigation measure recommended by the District to achieve the required NO_X and PM_{10} emission reductions is the adoption of a "Clean Fleet" for construction. In order to achieve the prescribed emission reductions, construction workers must prioritize the use of newer, cleaner burning equipment as often as possible during construction.

A Clean Fleet as prescribed by the District utilizes daily operational records for each piece of equipment greater than 50-horsepower that is used on the project site during construction. Within 30-days of the completion of each construction phase, a report summarizing total hours of operation by equipment type, equipment model year and horsepower for each piece of construction equipment greater than 50-horsepower is submitted to the District. The District will verify that the fleet details

achieved the required emission reductions through the preferred use of newer cleaner burning construction equipment. If the reductions are not met, or only partially met, the District will require an off-site mitigation fee to cover remaining emissions after on-site mitigation has been applied.

The mitigated emission totals shown in Table 2B include the required 20% NO_x and 45% PM_{10} reductions in exhaust emissions per ISR Rule 9510. As shown in Table 2B, the mitigated emissions for NO_x remain above the CEQA significance threshold of 10 tons per year. Therefore, short-term construction emissions could create a significant impact and unavoidable impact. Construction emissions by their very nature are temporary and would only occur during the construction phase of the project.

Table 2B: Mitigated Construction Emissions

Construction Emissions	Pollutants			
	ROG	**NOx**	**SOx**	**PM10**
Threshold of Significance (tpy)	10	10	15	15
Mitigated Construction Emissions Totals (tpy)	2.5	30.7	0.07	0.74
Exceed Threshold?	No	**Yes**	No	No

Due to the size and location of the Tulare Solar Center, the project will also have to comply with the District Regulation VIII Fugitive PM_{10} Prohibitions requirements. The details of Regulation VIII are discussed under mitigation measure Air-2 below.

Mitigation Measures

Air-1: Demonstration of a Clean Fleet. The construction fleet must achieve exhaust emission reductions through the prioritized use of newer, cleaner burning equipment during construction. The utilization of cleaner burning equipment must be documented by the construction team on the District's prescribed detailed fleet form for the duration of project construction. Exhaust emission reduction calculations after project build-out will be based on the actual usage of construction equipment from the detailed fleet records. Should the application of a clean fleet not comply with Rule 9510, fees will be required by the District for use in implementing the remaining emission reduction requirements.

Air-2: The following parts of the District Regulation VIII Fugitive PM_{10} Prohibitions would be implemented during Project construction:

- Rule 8021 – Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities. Wellhead must develop a Dust Control Plan. This plan must be approved or conditionally approved prior to commencement of construction activities. A Dust Control Plan as noted above shall contain the following information:
    - Name(s), address(es), and phone number(s) of person(s) and owner(s)/operator(s) responsible for the preparation, submittal, and implementation of the Dust Control Plan and responsible for the dust generating operation and the application of dust control measures.
    - A plot plan which shows the type and location of each project.
    - The total area of land surface to be disturbed, daily throughput volume of earthmoving in cubic yards, and total area in acres of the entire project site.
    - The expected start and completion dates of dust generating and soil disturbance activities to be performed on the site.
    - The actual and potential sources of fugitive dust emissions on the site and the location of bulk material handling and storage areas, paved and unpaved roads; entrances and exits where carryout/trackout may occur; and traffic areas.
    - Dust suppressants to be applied, including: product specifications; manufacturer's usage instructions (method, frequency, and intensity of application); type, number, and capacity of application equipment; and information on environmental impacts and approvals or certifications related to appropriate and safe use for ground application.
    - Specific surface treatment(s) and/or control measures utilized to control material carryout, trackout, and sedimentation where unpaved and/or access points join paved public access roads.
    - At least one key individual representing the owner/operator or any person who prepares a Dust Control Plan must complete a Dust Control Training Class conducted by the District. The District will conduct Dust Control Training Classes on an as needed basis.
- Rule 8021 - Recordkeeping requirements on days fugitive dust control measures are implemented. The project is required to comply with speed limitations and post speed limit signs on uncontrolled unpaved access/haul roads. Additionally, during wind events construction operations must be stopped when visible dust emissions exceed 20% opacity.

- Rule 8031 – Bulk Materials. As part of the Dust Control Plan, bulk material storage, transport, and handling needs to be controlled. Control measures specific to the Rule 8031 must be sufficiently implemented to limit VDE to 20% opacity or to comply with the conditions for a stabilized surface as defined in Rule 8011.
- Rule 8041 – Carryout and Trackout. As part of the Dust Control Plan, Carryout and trackout must be prevented as specified:
    - Installing and maintaining a trackout control device meeting the specifications contained in 8041 Section 5.9 at all access points to paved public roads, or
    - Utilizing a carryout and trackout prevention procedure which has been demonstrated to the satisfaction of the APCO and US EPA as achieving an equivalent or greater level of control than specified in Section 8041 Section 5.8.1.1.
    - In the event that measures specified above are insufficient to prevent carryout and trackout, removal of any carryout and trackout must be accomplished within one-half hour of the generation of such carryout and trackout.
- Rule 8051 – Open Areas. Whenever open areas are disturbed or vehicles are used in open areas, the Project must implement one or a combination of control measures indicated below to comply with the conditions of a stabilized surface at all times and to limit VDE to 20% opacity.
    - Apply and maintain water or dust suppressant(s) to all un-vegetated areas, or
    - Establish vegetation on all previously disturbed areas; or
    - Pave, apply and maintain gravel, or apply and maintain chemical/organic stabilizers/suppressants
    - Upon evidence of trespass, prevent unauthorized vehicle access by: Posting "No Trespassing" signs or installing physical barriers such as fences, gates, posts, and/or other appropriate barriers to effectively prevent access to the area.

3.2 *Operational Emissions*

The Project will be maintained and manned by a minimal number of employees to operate the 80 MW PV solar farm. Operation of the solar modules does not generate NO_X, CO, VOC, PM_{10} or SO_X emissions. Project operational emissions will be generated by employee commute trips and water trucks used for PV panel washing that will total between 0 and 10 trips per day.

To estimate the worst case impacts, the following assumptions were made: 1) one heavy-duty water truck 80 days/year traveling 2.5 miles offsite per day, and 48 miles onsite per day; 2) three operations and maintenance personnel working 247 days per year traveling 50 round-trip

miles per day and 5 miles onsite per day; 3) one security worker working 10 days/year and traveling 50 round-trip miles per day and 5 miles onsite per day; and 4) one delivery truck 48 days/year traveling 50 round-trip miles offsite and 1 mile onsite. Onsite travel is on unpaved roads and offsite travel is on paved roads.

Consistent with the District policy on CEQA compliance for review of PV solar projects, the operational emissions from the Project have been estimated using the District's Solar Project Calculator and EMFAC2011. Based on these models, criteria pollutant emissions from Project operations are shown as Operational Emissions in Table 3A below. Complete calculation spreadsheets are provided in Appendix A to this document.

Table 3A: Unmitigated Operational Emissions

Operational Emissions	Pollutants			
	ROG	NOx	SOx	PM10
Threshold of Significance (tpy)	10	10	27.4	15
Un-Mitigated Operational Emissions Totals (tpy)	0.01	0.08	< 0.01	4.70
Exceed Threshold?	No	No	No	No

As shown in Table 3A above, none of the pollutants exceed the significance thresholds for operational emissions. Rule 9510 - Indirect Source Review requires operational emission reductions of 33.3% NO_X and 50% PM_{10} for 10 years. As a result the already insignificant emissions will be reduced even further as shown in Table 3B below.

Table 3B: Mitigated Operational Emissions

Construction Emissions	Pollutants			
	ROG	NOx	SOx	PM10
Threshold of Significance (tpy)	10	10	15	15
Mitigated Operational Emissions Totals (tpy)	0.01	0.05	< 0.01	2.35
Exceed Threshold?	No	No	No	No

3.3 *Air Quality Plans & Standards*

As discussed above, Project construction NO_X impacts would pose a temporary significant impact. The remaining criteria pollutant construction emissions would be below the District's thresholds of significance and impacts to air quality would be less than significant.

Project construction would not conflict with or obstruct implementation of the applicable SJVAPCD air quality control plan. The primary source of criteria pollutant emissions generated by the Project would be associated with construction activities. It is required by regulation that construction of the Project would be conducted in compliance with SJVAPCD's Regulation VIII, Fugitive PM10 Prohibitions and SJVAPCD's Rule 9510 Indirect Source Review. Therefore, the Project would not obstruct implementation of the PM10 maintenance plan.

Operational emissions are also expected to be below the District's thresholds of significance for criteria pollutants and impacts to air quality will also be less than significant. As such, the Project is not expected to interfere with air quality plans. Control measures outlined in the 2007 8-Hour Ozone Plan focus primarily on control of stationary sources and indirect sources such as housing and commercial developments that may generate substantial vehicle trips during operations.

Operation of the Project would generate a very small number of vehicle trips associated with commuting workers and other workers that would periodically clean and maintain the panels. Therefore, operation of the Project would not create a permanent substantial source of ozone precursor emissions, and would not obstruct implementation of the SJVAPCD's ozone attainment plan. The PM_{10} maintenance plan focuses on how the SJVAPCD will maintain attainment of the federal 24-hour PM_{10} standard. This Plan focuses on implementing rules that limit PM_{10} emissions from various industrial sources as well as fugitive dust emissions.

Emissions from project operations are expected to be less than the applicable significance thresholds. Therefore, emissions from project operations are not expected to exceed state and federal ambient air quality standards at the Project's property boundaries and are considered less than significant. In conclusion, the project does not conflict with the implementation strategy of the San Joaquin Valley Regional Air Quality Management Plans (2012 PM2.5 Plan; 2007 8-Hour Ozone Plan; and 2007 PM10 Maintenance Plan).

3.4 *Cumulative Impacts*

Construction: The SJVAPCD has developed strategies to reduce criteria pollutant emissions outlined in the Air Quality Management Plan (AQMP) pursuant to Federal CAA mandates. As such, individual projects would comply with applicable SJVAPCD rules and requirements, and implement feasible control measures. The proposed project would comply with adopted AQMP emission control measures as described above. Per the CEQA requirement that significant impacts will be mitigated to the extent feasible, these same requirements would also be imposed on construction projects Basin-wide, which would include related projects. The San Joaquin Valley Air Basin has recently witnessed a number of PV Solar Farm projects, which are subject to the same ISR and CEQA requirements specified for this project. As such, each related project would be evaluated for potential adverse air quality impacts and mitigated as necessary to reduce criteria pollutant emissions pursuant to Rule 9510 and applicable CEQA thresholds. Despite the reductions in impacts on air quality achievable through implementation of these mitigation measures, the cumulative temporary construction impacts on air quality would remain cumulatively significant and unavoidable.

Operation: Air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development. Future attainment of state and federal ambient air quality standards is a function of successful implementation of the District's attainment plans. Consequently, the District's application of thresholds of significance for criteria pollutants is relevant to the determination of whether a project's individual emissions would have a cumulatively significant impact on air quality. If a project's emissions are less than the thresholds of significance for criteria pollutants, the project would not be expected to result in a cumulatively considerable net increase of criteria pollutants for which the District is in non-attainment under the applicable federal or state ambient air quality standards. As discussed above, Project operational emissions are below the District's ISR thresholds of significance for criteria pollutant emissions. Therefore, project related operational emissions would have a less than significant impact on air quality.

3.5 *Health Risk Impacts*

Construction: The greatest potential for TAC emissions would be related to DPM emissions associated with diesel-fueled construction equipment. According to District methodology, health risk impacts from carcinogenic air toxics are usually described in terms of individual cancer risk. “Individual Cancer Risk” is the likelihood that a person exposed to specified concentrations of TACs over a 70-year lifetime will contract cancer, based on the use of standard risk-assessment methodology

developed by the California Office of Environmental Health Hazard Assessment (OEHHA). Due to the temporary nature, and relatively short duration of construction activities compared to methods used to characterize health risk, no significant construction health risk impacts are expected.

Operation: The greatest potential for TAC emissions would be related to DPM emissions associated with the diesel-fueled water truck. Negligible hazardous air pollutant emissions are expected to be emitted during operation of the remainder of the Project. As such, no significant operational health risk impacts are expected.

3.6 Greenhouse Gas (GHG) Impacts

GHG emissions from construction activities include carbon dioxide (CO_2) from on-road and off-road construction activities. Using the EMFAC2011 and OFFROAD2011 models, project construction GHG emissions were estimated at 4,984 metric tons/year of carbon dioxide equivalent (CO_2e). Detailed emission calculations are provided in Appendix A. Since construction emissions are temporary and CEQA significance thresholds for GHG emissions during construction have not been established, no further analysis is required.

Operational GHG emissions were estimated based on fossil fuel burning activities associated with Tulare Solar Center staff, security, vendor deliveries, and PV panel washing activities. Emissions were quantified based on emissions factors derived from EMFAC2011 which can be found in Appendix A of this document. CO_2e emissions from operations were estimated to be approximately 21 metric tons per year. This is less than the CEQA significance threshold of 230 metric tons per year of CO_2e as provided in SJVAPCD Policy APR 2015, Zero Equivalency Policy for Greenhouse Gases. Therefore, operation of the project would have a less than significant impact of GHG.

In addition, the 80 MW Tulare Solar Center is a project that is consistent with the CARB AB32 scoping plan and the State's Renewable Portfolio Standard (RPS) which calls for increasing renewable electricity in the State. The intent of the scoping plan was to reduce California GHG emissions in accordance with AB32 goals, and the very nature of the proposed Tulare Solar Center PV solar project would represent improvements above what can be considered "business as usual" (BAU). The proposed project would help reduce the carbon intensity of electricity generated to serve California consumers, and thereby reduce electricity sector GHG emissions as compared to BAU. As reported in the 2011 Intergovernmental Panel on Climate Change (IPCC) Special Report on Renewable Energy Sources and Climate Change Mitigation, a PV Solar project would demonstrate 15-30 times less CO_2e emissions as compared

to burning fossil fuels to achieve the same energy outputs. Although the Project would include maintenance activities, emissions from these activities are trivial when compared with conventional fossil-fueled electricity generation technologies and the associated operational GHGs emissions. The reductions in CO_2e emissions per MW of energy produced from this proposed Project would easily outweigh the comparatively small operational GHG impacts.

3.7 Odor Impacts

While offensive odors rarely cause physical harm, they may be unpleasant, potentially leading to distress among the public and often generating citizen complaints to local governments and the District. A project with the potential to frequently expose members of the public to objectionable odors should be deemed to have a significant impact. Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, there is no quantitative or formulaic methodologies to determine if potential odors would have a significant impact. Rather, projects must be assessed on a case-by-case basis.

Diesel exhaust from construction activities may generate odors. However, construction emissions are temporary in nature and are not expected to affect a substantial number of people. Due to the nature of Project operations and experience gained from other solar PV generating facilities, it is assumed that the Project would not generate substantive odors during operation of the Project. As such, project odors would have a less than significant impact during both construction and operation of the Project.

Appendix A
Emission Model Output Files

Summary of Construction Emissions (tpy)

Construction Emission Sources	Emission Information Reference	NOx	ROG	PM2.5	PM10	SOx	CO	CO2	CO2e (MT)
Equipment Emissions	SACMETRO & OFFROAD	22.76	1.90	0.65	0.69	0.04	---	2,515	2,281
Vehicular Emissions Offsite	EMFAC 2011	15.19	0.54	0.46	0.64	0.03	6.58	2,908	2,638
Vehicular Emissions Onsite	EMFAC 2011	0.47	0.05	0.017	0.02	0.0004	0.14	71	65
Total Unmitigated (tpy)		**38.42**	**2.49**	**1.12**	**1.35**	**0.07**	**6.71**	**5,494**	**4,984**
SJVAPCD CEQA Significance Thresholds (tpy)		**10**	**10**	---	**15**	**27.4**	---	---	---
Exceeds Significance Threshold (Y/N)?		**YES**	**NO**	---	**NO**	**NO**	---	---	---
Total Mitigated (tpy)		**30.73**	**2.49**	**1.12**	**0.74**	**0.07**	**6.71**	**5,494**	**4,984**

Summary of Operation Emissions (tpy)

Construction Emission Sources	Emission Information Reference	NOx	ROG	PM2.5	PM10	SOx	CO	CO2	CO2e (MT)
Vehicular Emissions Offsite	EMFAC 2011	0.0078	0.0016	0.0006	0.0015	0.0001	0.0514	10	9
Vehicular Emissions Onsite	EMFAC 2011	0.0687	0.0069	0.0022	0.0028	0.0001	0.0261	13	12
Fugitive Dust Offsite	AP42	---	---	0.01	0.05	---	---	---	---
Fugitive Dust Onsite	AP42	---	---	0.46	4.64	---	---	---	---
Total Unmitigated (tpy)		**0.08**	**0.01**	**0.48**	**4.70**	**0.00**	**0.08**	**23**	**21**
SJVAPCD CEQA Significance Thresholds (tpy)		**10**	**10**	---	**15**	**27.4**	---	---	**230**
Exceeds Significance Threshold (Y/N)?		**NO**	**NO**	---	**NO**	**NO**	---	---	**NO**
Total Mitigated (tpy)		**0.05**	**0.01**	**0.48**	**2.35**	**0.00**	**0.08**	**23**	**21**

One Year Build Out Daily Emissions

Equipment Information							SacMetro Outputs				OFFROAD Outputs		
Equipment	**HP**	**Number**	**Hr/Day/Each**	**Hr/Project/Each**	**Hr/Project/Type**	**Model Year**	**NOx (lb/day)**	**ROG (lb/day)**	**PM2.5 (lb/day)**	**PM10 (lb/day)**	**CO2 EF (g/HP-Hr)**	**CO2 Emissions (lb/day)**	**SOx (lb/day)**
Graders	174	4	1.0	260	1,040	1997	5.03	0.73	0.31	0.33	346.97	532	0.008
Rubber Tired Dozers	313	8	1.0	260	2,080	1996	15.51	1.18	0.41	0.43	335.60	1,853	0.028
Tractors/Loaders/Backhoes	108	8	1.0	260	2,080	1997	6.10	0.97	0.39	0.42	312.85	596	0.010
Excavators	168	4	1.0	260	1,040	1997	4.45	0.64	0.27	0.28	324.22	480	0.007
Rough Terrain Forklifts	93	4	1.0	260	1,040	1998	2.34	0.47	0.22	0.23	341.29	280	0.004
Crawler Tractors	147	4	1.0	260	1,040	1997	4.19	0.59	0.24	0.25	364.04	472	0.006
Off-Highway Trucks	189	4	0.5	130	520	1996	2.41	0.19	0.06	0.06	324.22	270	0.004
Bore/Drill Rigs	291	4	6.0	1,560	6,240	1996	51.35	3.76	1.21	1.28	426.61	6,568	0.077
Cement and Mortar Mixers	300	4	6.0	1,560	6,240	1996	57.14	4.11	1.27	1.36	318.53	5,056	0.079
Cranes	250	4	6.0	1,560	6,240	1996	26.57	1.97	0.61	0.64	244.59	3,235	0.066
						Total (lb/day)	**175.08**	**14.62**	**4.98**	**5.28**	**---**	**19,343**	**0.29**
						Total (tpy)	**22.76**	**1.90**	**0.65**	**0.69**	**---**	**2,515**	**0.04**

Project Duration (Working Days) =	**260**

EMFAC2011 Output Results for Construction

CONSTRUCTION	Trips Related to Construction			
Vehicle Emission Source:	**Construction Workers**	**Construction Traffic & Deliveries**	**Construction Other**	
VEHICLE: number of vehicle per day	195	90	3	
VEHICLE : type (eg MDV, HHDT)	LDA	HHDT (T7 Public)	MDV	
VEHICLE: average gross vehicle weight (lbs)	6,000	46,501	7,126	
VEHICLE: average weight in tons	3	23	4	
OFF SITE VEHICLE SPEED (mph)	55			
ON SITE VEHICLE SPEED (mph)	15			
PER VEHICLE: number of working days	260	260	260	
PER VEHICLE: roundtrip distance (mile)	50	50	50	
PER VEHICLE: distance traveled onsite per day (mile)	0	1	1	
Total onsite miles for the project	0	23,400	780	
Total offsite miles for the project	2,535,000	1,170,000	39,000	
CONSTRUCTION ON-SITE EMISSION RATES (g/mile)				
NOx running exhaust	0.205	18.015	0.590	
PM10 running exhaust	0.006	0.676	0.007	
PM10 tire wear	0.008	0.036	0.008	
PM10 brake wear	0.037	0.062	0.037	
ROG running exhaust	0.147	1.834	0.227	
CO running exhaust	2.918	5.142	4.883	
SOx running exhaust	0.003	0.017	0.006	
PM2.5 running exhaust	0.006	0.622	0.006	
PM2.5 tire wear	0.002	0.009	0.002	
PM2.5 brake wear	0.016	0.026	0.016	
CO2 running exhaust	649	2,728	1,117	
CONSTRUCTION ON-SITE EMISSIONS (tons/project)				**Total (tpy)**
NOx running exhaust	0.00E+00	4.65E-01	5.07E-04	4.65E-01
PM10 running exhaust	0.00E+00	1.74E-02	6.08E-06	1.75E-02
PM10 tire wear	0.00E+00	9.29E-04	6.88E-06	9.35E-04
PM10 brake wear	0.00E+00	1.59E-03	3.16E-05	1.62E-03
ROG running exhaust	0.00E+00	4.73E-02	1.95E-04	4.75E-02
CO running exhaust	0.00E+00	1.33E-01	4.20E-03	1.37E-01
SOx running exhaust	0.00E+00	4.43E-04	4.99E-06	4.48E-04
PM2.5 running exhaust	0.00E+00	1.61E-02	5.58E-06	1.61E-02
PM2.5 tire wear	0.00E+00	2.32E-04	1.72E-06	2.34E-04
PM2.5 brake wear	0.00E+00	6.82E-04	1.35E-05	6.96E-04
CO2 running exhaust	0.00E+00	7.04E+01	9.60E-01	7.13E+01
CONSTRUCTION OFF-SITE EMISSION RATES (g/mile)				
NOx running exhaust	0.159	11.420	0.415	
PM10 running exhaust	0.002	0.299	0.002	
PM10 tire wear	0.008	0.036	0.008	
PM10 brake wear	0.037	0.062	0.037	
ROG running exhaust	0.050	0.308	0.068	
CO running exhaust	1.593	1.562	2.604	
SOx running exhaust	0.003	0.017	0.006	
PM2.5 running exhaust	0.002	0.275	0.002	
PM2.5 tire wear	0.002	0.009	0.002	
PM2.5 brake wear	0.016	0.026	0.016	
CO2 running exhaust	302	1,583	520	
CONSTRUCTION OFF-SITE EMISSIONS (tons/project)				**Total (tpy)**
NOx running exhaust	0.44	14.73	0.02	15.19
PM10 running exhaust	0.01	0.39	0.00	0.39
PM10 tire wear	0.02	0.05	0.00	0.07
PM10 brake wear	0.10	0.08	0.00	0.18
ROG running exhaust	0.14	0.40	0.00	0.54
CO running exhaust	4.45	2.01	0.11	6.58
SOx running exhaust	0.01	0.02	0.00	0.03
PM2.5 running exhaust	0.00	0.36	0.00	0.36
PM2.5 tire wear	0.01	0.01	0.00	0.02
PM2.5 brake wear	0.04	0.03	0.00	0.08
CO2 running exhaust	844	2,042	22	2,908

EMFAC2011 Output Results for Operation

OPERATIONAL	Trips Related to Operational (i.e. Maintenance, panel cleaning)				
Vehicle Emission Source:	**Delivery**	**Operator**	**Security**	**Water Truck**	
VEHICLE: number of vehicle per day	1	2	1	1	
VEHICLE : type (eg MDV, HHDT)	MDV	LDA	LDA	HHDT	
VEHICLE: average gross vehicle weight (lbs)	7125.5	6000	6000	46500.5	
VEHICLE: average weight in tons	3.6	3.0	3.0	23.3	
OFF SITE VEHICLE SPEED (mph)	55				
ON SITE VEHICLE SPEED (mph)	15				
PER VEHICLE: number of working days per year	48	247	10	80	
PER VEHICLE: roundtrip distance (mile)	50	50	50	2.5	
PER VEHICLE: distance traveled onsite per day (mile)	1	5	5	48	
Total onsite miles for the project	48	2,470	50	3,840	
Total offsite miles for the project	2400	24,700	500	200	
OPERATIONAL ON-SITE EMISSION RATES (g/mile)					
NOx running exhaust	0.590	0.205	0.205	16.083	
PM10 running exhaust	0.007	0.006	0.006	0.519	
PM10 tire wear	0.008	0.008	0.008	0.036	
PM10 brake wear	0.037	0.037	0.037	0.062	
ROG running exhaust	0.227	0.147	0.147	1.541	
CO running exhaust	4.883	2.918	2.918	4.183	
SOx running exhaust	0.006	0.003	0.003	0.017	
PM2.5 running exhaust	0.006	0.006	0.006	0.478	
PM2.5 tire wear	0.002	0.002	0.002	0.009	
PM2.5 brake wear	0.016	0.016	0.016	0.026	
CO2 running exhaust	1,117	649	649	2,718	
OPERATIONAL ON-SITE EMISSIONS (tons/project)					**Total (tpy)**
NOx running exhaust	3.12E-05	5.58E-04	1.13E-05	6.81E-02	6.87E-02
PM10 running exhaust	3.74E-07	1.74E-05	3.53E-07	2.20E-03	2.22E-03
PM10 tire wear	4.23E-07	2.18E-05	4.41E-07	1.52E-04	1.75E-04
PM10 brake wear	1.94E-06	1.00E-04	2.03E-06	2.61E-04	3.65E-04
ROG running exhaust	1.20E-05	4.01E-04	8.12E-06	6.52E-03	6.94E-03
CO running exhaust	2.58E-04	7.95E-03	1.61E-04	1.77E-02	2.61E-02
SOx running exhaust	3.07E-07	9.18E-06	1.86E-07	7.01E-05	7.97E-05
PM2.5 running exhaust	3.43E-07	1.58E-05	3.20E-07	2.02E-03	2.04E-03
PM2.5 tire wear	1.06E-07	5.45E-06	1.10E-07	3.81E-05	4.38E-05
PM2.5 brake wear	8.33E-07	4.29E-05	8.68E-07	1.12E-04	1.57E-04
CO2 running exhaust	0.06	1.77	0.04	11.50	13.37
OPERATIONAL OFF-SITE EMISSION RATES (g/mile)					
NOx running exhaust	0.415	0.159	0.159	10.204	
PM10 running exhaust	0.002	0.002	0.002	0.235	
PM10 tire wear	0.008	0.008	0.008	0.036	
PM10 brake wear	0.037	0.037	0.037	0.062	
ROG running exhaust	0.068	0.050	0.050	0.252	
CO running exhaust	2.604	1.593	1.593	1.294	
SOx running exhaust	0.006	0.003	0.003	0.017	
PM2.5 running exhaust	0.002	0.002	0.002	0.216	
PM2.5 tire wear	0.002	0.002	0.002	0.009	
PM2.5 brake wear	0.016	0.016	0.016	0.026	
CO2 running exhaust	520	302	302	1,577	
CONSTRUCTION OFF-SITE EMISSIONS (tons/project)					**Total (tpy)**
NOx running exhaust	1.10E-03	4.33E-03	8.77E-05	2.25E-03	7.77E-03
PM10 running exhaust	5.24E-06	5.00E-05	1.01E-06	5.19E-05	1.08E-04
PM10 tire wear	2.12E-05	2.18E-04	4.41E-06	7.94E-06	2.51E-04
PM10 brake wear	9.72E-05	1.00E-03	2.03E-05	1.36E-05	1.13E-03
ROG running exhaust	1.80E-04	1.36E-03	2.75E-05	5.55E-05	1.62E-03
CO running exhaust	6.89E-03	4.34E-02	8.78E-04	2.85E-04	5.14E-02
SOx running exhaust	1.54E-05	9.18E-05	1.86E-06	3.65E-06	1.13E-04
PM2.5 running exhaust	4.79E-06	4.50E-05	9.10E-07	4.77E-05	9.84E-05
PM2.5 tire wear	5.29E-06	5.45E-05	1.10E-06	1.98E-06	6.28E-05
PM2.5 brake wear	4.17E-05	4.29E-04	8.68E-06	5.83E-06	4.85E-04
CO2 running exhaust	1.38	8.22	0.17	0.35	10.11

Fugive Dust Emissions - Off Site

Paved Roads (Off Site)

Eext = [k (sL)0.91 * (W)1.02] [1 - (P / 4N)]

k = particle size multiplier (lb/VMT) - see Table 13.2.1-1
sL = road surface silt loading (g/m2) - see Table 13.2.1-2
W = average weight (tons) of the vehicles traveling the road
P = number of wet days (0.01") in the averaging period - see Figure 13.2.1-2
N = number of days in the averaging period (365 annual, 91 seasonal, 30 monthly)
Eext = annual average emission factor (lb/VMT)
AP-42 data: http://www.epa.gov/ttn/chief/ap42/ch13/index.html

PM10 Values	PM2.5 Values
0.0022	0.00054
0.6	0.6
2.62	2.62
40	40
365	365
3.58E-03	8.80E-04

Source	total tons PM10	total tons PM2.5
Delivery	0.0043	0.0011
Operator	0.0443	0.0109
Security	0.0009	0.0002
Water Truck	0.0004	0.0001
Total Off-Site	**0.0498**	**0.0122**

Fugive Dust Emissions - On Site

Unpaved Roads (On Site)

Eext = [k (s / 12)a * (W / 3)b] [(365-P) / 365]

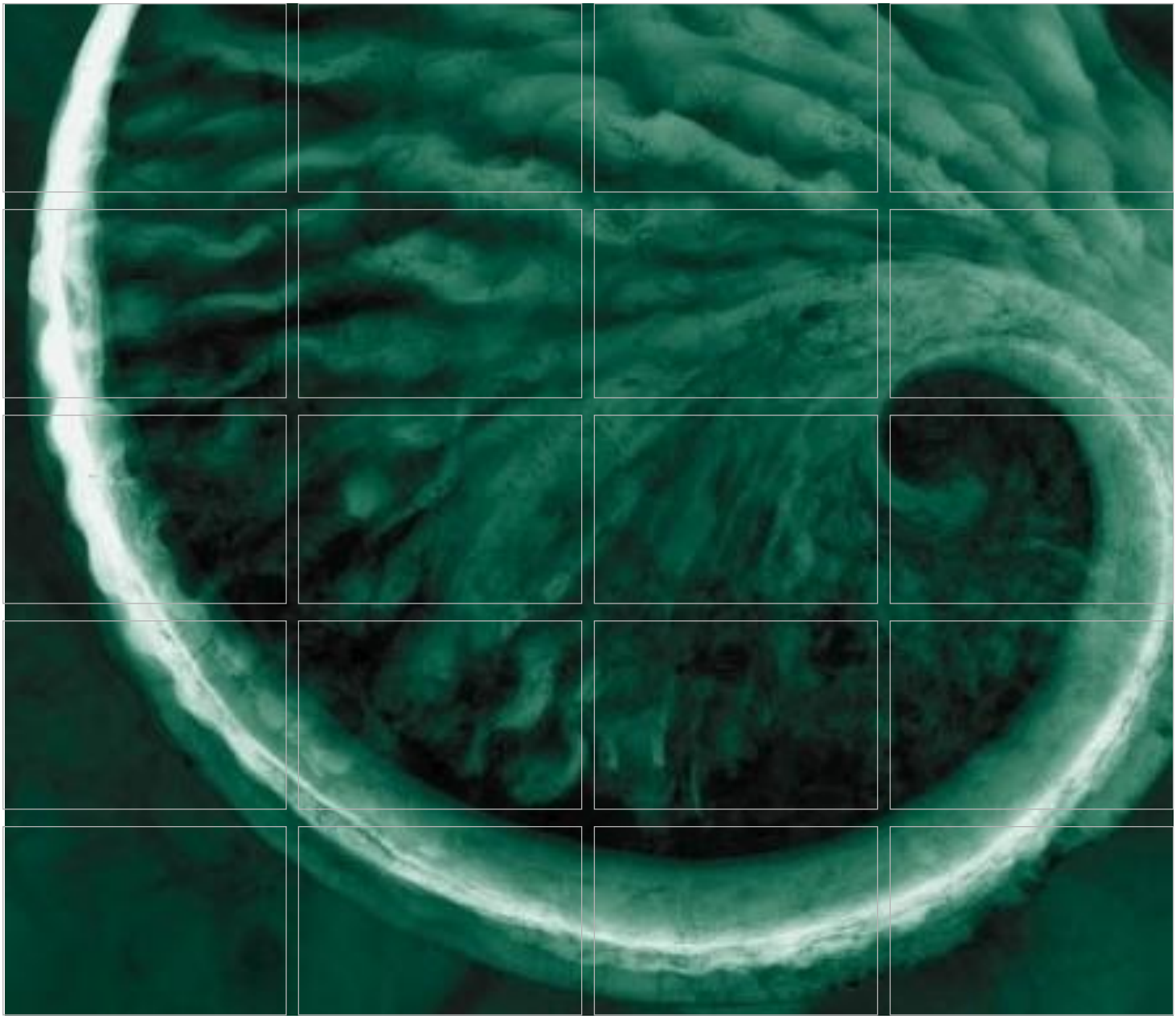
k = particle size multiplier (lb/VMT) -see Table 13.2.2-2 (k = 1.5 for industrial roads, 1.8 for public roads)
s = surface material silt content (%) - see Table 13.2.2-1 (we use construction site)
a = constant - see Table 13.2.2-2 (0.9 for industrial roads; 1 for public roads)
W = mean vehicle weight (tons)
b = constant - see Table 13.2.2-2 (0.45 for industrial roads; 0 for public roads)
P = number of wet days (0.01") in a year
Eext = annual size specific emission factor extrapolated for natural mitigation (lb/VMT)
AP-42 data: http://www.epa.gov/ttn/chief/ap42/ch13/index.html

PM10 Values	PM2.5 Values
1.5	0.15
8.5	8.5
0.9	0.9
7.16	7.16
0.45	0.45
40	40
1.45	0.14

Source	total tons PM10	total tons PM2.5
Delivery	0.03	0.00
Operator	1.79	0.18
Security	0.04	0.00
Water Truck	2.78	0.28
Total On-Site	**4.64**	**0.46**

Appendix C

Biological Survey Report,
Tulare Solar Center



Biological Survey Report

Tulare Solar Center Project
Tulare County, CA

June 2012

www.erm.com

Prepared for:
Tulare Solar Center, LLC

Delivering sustainable solutions in a more competitive world

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Tulare Solar Center, LLC

Biological Survey Report

Tulare Solar Center Project
Tulare County, CA

June 2012

Project No. 0141599

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1.0 INTRODUCTION

Tulare Solar Center (TSC), a project being developed by Wellhead Renewable Energy, LLC (WRE), is proposing to construct, own, and operate a solar photovoltaic (PV) electric generating facility on a site near the community of Ducor in unincorporated Tulare County, California. The Project would be electrically connected to the California Independent System Operator (CAISO) controlled grid, with its electricity sold to one of the State's Investor Owned Utilities (IOUs), a municipality, or a CAISO market participant.

The Project would entail the installation of photovoltaic arrays on up to approximately 800 acres of predominantly agricultural land (Assessor Parcel Numbers (APNs) 339-110-06, 339-110-10, 339-110-16, 339-100-07, 339-140-01, 339-140-08, and 339-140-10 (1,144.23 acres in total)), as well as the construction of associated transmission lines ("t-lines"), generation-tie lines ("gen-tie lines"), and fiber optic lines which would connect the PV site to the Vestal Substation to the west (Figure 1). Almost all of the utility lines would be hung on existing wooden utility poles, although there may be areas where cables would be buried, and where new utility poles would be required. The proposed photovoltaic arrays and associated utility lines are hereafter referred to as "Project Site" or "Site." The purpose of this assessment is to characterize the biological resources present at this proposed Site, and any potential impacts to these resources as a result of the proposed Project.

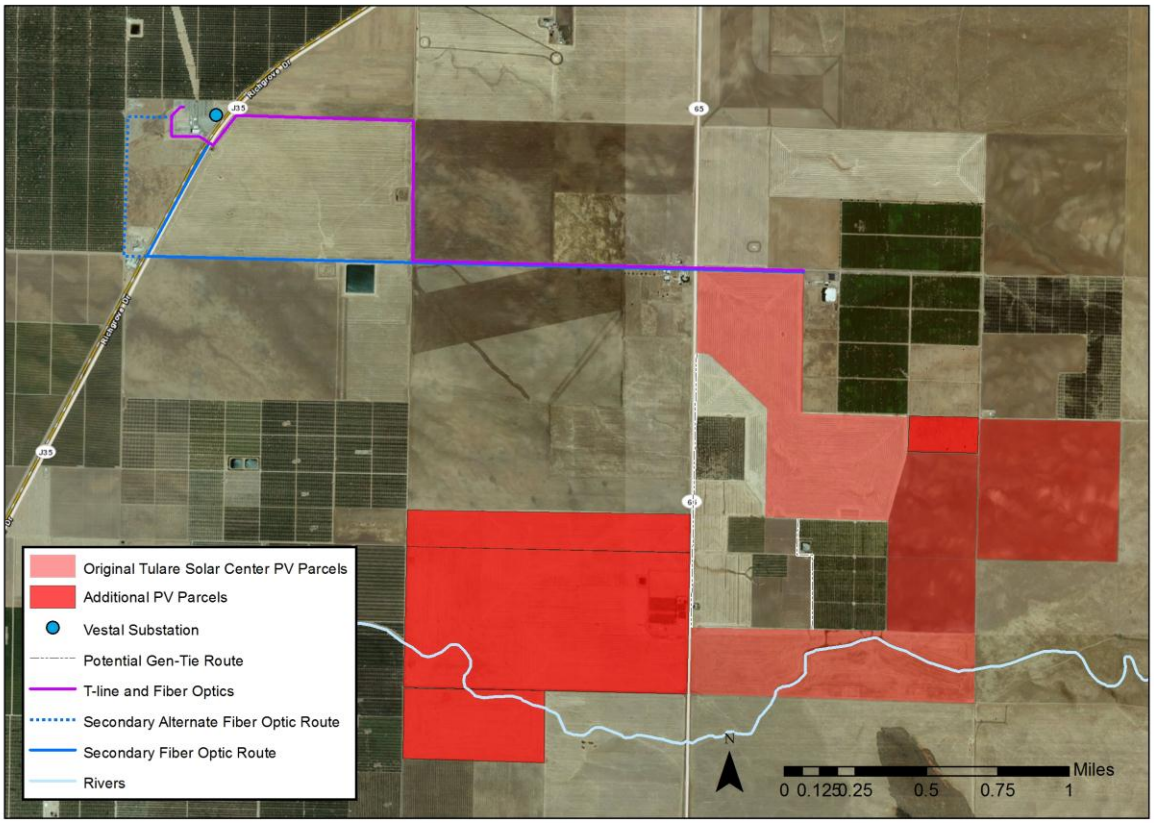

Figure 1. Proposed Tulare solar center parcels (in red) and potential t-lines and fiber optic lines (in purple and blue) which would connect to the Vestal Substation to the northwest.

2.0 *ENVIRONMENTAL SETTING*

The Project would be located on historically disturbed agricultural lands in an unincorporated area of Tulare County, California as shown in Figure 1. The Project Site is located along Highway 65, approximately 3.5 miles north of Highway 155 or 4 miles south of Ducor. Porterville Highway (State Route 65) bisects the Project Site in the north to south direction. The site comprises seven parcels, APNs 339-100-07, 339-110-006, 339-110-10, 339-110-116, 339-140-01, 339-140-08, and 339-140-10.

The site topography ranges from flat to gently sloped, and although APN 339-140-01 contains site improvements, including a farm house, a shop, a storage building, and related servicing utilities, the Project will not impact these improved areas. Rural unpaved roads run adjacent to southern, western and eastern portions of the Project Site. A paved highway (Porterville Highway or State Route 65) bisects the site at the Site's east-west mid-point, and a graveled county road (Avenue 24) runs adjacent to the northern portion. The site is bordered by undeveloped lands and agricultural fields.

The Project Site consists of undeveloped land that is zoned as Exclusive Agricultural (AE-40) and designated as Rural Valley Lands under the Tulare County General Plan, and is designated as Farmland of Local Importance by the California Farmland Mapping and Monitoring Program (FMMP). The solar panels would be on land that is mostly used for non-irrigated (dryland) small grain farming (i.e., wheat and barley), with the exception of one small parcel (APN 339-110-16) that contains an abandoned and dead vineyard. Other agricultural land uses in the area includes grazing cattle, sheep and horses, and growing kiwi, grapes, almonds, and citrus. Williamson Act contracts apply to the Project Site. The Project is consistent with Section 16 of Ordinance 352, as amended, allowing solar PV electric generating facilities within agricultural zoned lands, subject to a Special Use Permit and Developer Agreement.

The Project Site is located in the Great Valley geomorphic province. The Great Valley province is an alluvial plain in the central portion of California, where sediments have been deposited almost continuously since the Jurassic Period (California Geological Survey [CGS] 2002).

3.0 REGULATORY OVERVIEW AND DEFINITIONS

The section includes a summary of federal, state and local regulations related to wetlands, environmentally sensitive areas, and sensitive habitats and species potentially occurring on the Site. These regulations apply to proposed Project activities with the potential to impact environmental or ecological resources identified at the Site.

3.1 WETLANDS

U.S. Army Corps of Engineers. "Waters of the U.S.", including wetlands, which are a subpart of "waters of the U.S.", are defined under the U.S. Army Corps of Engineers (Corps) regulatory guidelines found in 33 CFR Part 328. Wetlands in California are regulated by the Corps under Section 404 of the Clean Water Act (CWA), with federal regulation within the Project area administered by the Sacramento District of the Corps. Under Section 404 of the CWA, federal jurisdiction extends to those wetlands located on or adjacent to navigable waters of the U.S. or their tributary systems. Wetlands that do not meet this requirement, such as isolated wetlands that are not adjacent to, or do not have a sufficient hydrologic connection to navigable waters, are not regulated by the Corps.

The objectives of Corps regulations are to avoid, minimize and/or mitigate (in that order) impacts to waters of the U.S., their associated tributaries and wetlands. If impacts cannot be avoided, the applicant must obtain a permit from the Corps. Pre-construction notifications are typically required to be provided to the Corps for Projects that would impact greater than 0.1 acres of wetlands. In general, minor impacts can be permitted under the Nationwide Permit (NWP) Program, while larger impacts must be permitted under an Individual Permit.

Regional Water Quality Control Board. The Regional Water Quality Control Board (RWQCB) has regulatory authority over wetlands and waterways under both the Federal CWA and the State of California's Porter-Cologne Water Quality Control Act (California Water Code, Division 7). Although the Corps does not take jurisdiction over isolated wetlands, the RWQCB does take jurisdiction over isolated wetlands, under the authority of the Porter-Cologne Water Quality Control Act. Activities that lie outside of Corps jurisdiction may require the issuance of either individual or general waste discharge requirements from the RWQCB.

California Department of Fish and Game. Under Sections 1600–1616 of the California Fish and Game Code, the California Department of Fish and Game (CDFG) regulates activities that substantially divert, obstruct the natural flow of, or substantially change rivers, streams, and lakes. The jurisdictional limits of the CDFG are defined in Section 1602 of the California Fish and Game Code as the bed, channel, or bank of any river, stream, or lake. The CDFG regulates activities that would result in the deposit or disposal of debris, waste, or other materials into any river, stream, or lake and requires a Streambed Alteration Agreement for such activities.

3.2 ENDANGERED SPECIES

Under the Federal Endangered Species Act (ESA), the Secretary of the Interior (represented by the USFWS) and the Secretary of Commerce (represented by the National Marine Fisheries Service [NMFS]) have joint authority to list a species as threatened or endangered (United States Code [USC], Title 16, Section 1533[c]). Under the ESA, unauthorized "take" of a federally threatened and endangered wildlife species is prohibited. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect listed animal species, or attempt to engage in any such conduct (16 USC 1532(19)). Harm includes significant habitat modification or degradation that actually kills or injures listed wildlife by significantly impairing essential behavioral patterns, including breeding, feeding and sheltering (50 CFR 17.3(c)). The USFWS and NMFS may issue permits to authorize "incidental take" of listed species under either Section 7 or Section 10 of the ESA. "Incidental take" is defined as take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. An incidental take permit may be granted under ESA Section 7 for federal actions, including the issuance of permits by other federal agencies for non-federal Projects, through consultation with the agency taking the action and issuance of a Biological Opinion. ESA Section 10 may be used to support the issuance of an incidental take permit for non-federal actions when no other federal approvals are required through the adoption of a Habitat Conservation Plan.

The California Endangered Species Act (CESA) (California Fish and Game Code 2050) generally parallels the main provisions of the Federal ESA and is administered by the California Department of Fish and Game (CDFG). The CESA prohibits the "taking" of listed species; unlike the ESA, the CESA also applies the take prohibitions to species petitioned for listing

(state candidate species). An incidental take permit would also be required under the CESA, with the application submitted to the CDFG.

The California Native Plant Society (CNPS) is an organization in California that assists with the regulation and protection of native plants. The CNPS keeps lists of plants that may not be endangered enough for listing with the CESA or ESA, but are nearing that point. CNPS listed species are not protected under ESA or CESA unless they are a listed species; however, the CDFG does require a consultation if CNPS special status plants may be impacted by a Project.

3.3 NATIVE BIRDS

Migratory birds are regulated under the Migratory Bird Treaty Act (MBTA), which, except when permitted by other regulations, makes it a violation to "pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention . . . for the protection of migratory birds . . . or any part, nest, or egg of any such bird" (16 U.S.C. 703).

Most non-game birds are protected under the MBTA, including passerine species (e.g., songbirds), raptors, seabirds, shorebirds, and waterfowl. The most common potential violation of the MBTA is the incidental destruction of nests or eggs (including abandonment of active nests) as a result of Project activities that take place during the breeding season (March through August for most MBTA listed species). Eagles are also protected under the Bald and Golden Eagle Protection Act (16 U.S.C. Chapter 5A).

In addition, California Fish and Game Code Section 3503 prohibits the taking and possession of native birds' nests and eggs from all forms of needless take. California Fish and Game Code Section 3503.5 provides that it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulations adopted pursuant thereto. For these regulations, resource agencies typically consider "nests" to be active nests (nests with eggs or chicks). Destruction of inactive nests is generally not

considered "take."

3.4 *LOCAL LAWS, REGULATIONS, AND POLICIES APPLYING TO NATURAL RESOURCE PROTECTION*

The Project site is located in unincorporated Tulare County. There are no Habitat Conservation Plans that cover the proposed Project activities in this area of Tulare County. The Tulare County General Plan – Environmental Resources Management Element, Section 8.1 Biological Resources, has several policies that may be applicable to this Project (County of Tulare 2008). They include the following:

ERM-1.1 Protection of Rare and Endangered Species. The County shall ensure the protection of environmentally sensitive wildlife and plant life, including those species designated as rare, threatened, and/or endangered by State and/or federal government, through compatible land use development.

ERM-1.2 Development in Environmentally Sensitive Areas. The County shall limit or modify proposed development within areas that contain sensitive habitat for special-status species and direct development into less significant habitat areas. Development in natural habitats shall be controlled so as to minimize erosion and maximize beneficial vegetative growth.

ERM-1.7 Planting of Native Vegetation. The County shall encourage the planting of native trees, shrubs, and grasslands in order to preserve the visual integrity of the landscape, provide habitat conditions suitable for native vegetation and wildlife, and ensure that a maximum number and variety of well-adapted plants are maintained.

4.0 *DESKTOP REVIEW METHODOLOGY*

The desktop review consisted of collecting information related to potential wetlands and sensitive species and habitats located at the Project Site prior to performing the field investigation.

4.1 *WETLANDS*

ERM reviewed the following data sources for information on vegetation patterns, topography, drainage, and potential or known wetlands on the Site:

- U.S. Geological Survey (USGS) 7.5 minute topographic map of the Richgrove Quadrangle.
- Aerial photographs from USGS aerial photographs (orthoimages), Microsoft Terraserver images, and online aerial photographs from Google Earth.

4.2 *SENSITIVE SPECIES AND HABITATS*

ERM reviewed the following data sources to obtain information regarding sensitive species and habitats, including plant and animal species listed as endangered or threatened, that could potentially occur on the Site:

- CDFG's California Natural Diversity Database (CNDDB), http://www.dfg.ca.gov/biogeodata/cnddb/
- USFWS - Sacramento Fish and Wildlife Office, Species List, http://www.fws.gov/sacramento/es/spp_lists/auto_list_form.cfm
- Biogeographic Information and Observation System (BIOS) http://bios.dfg.ca.gov/

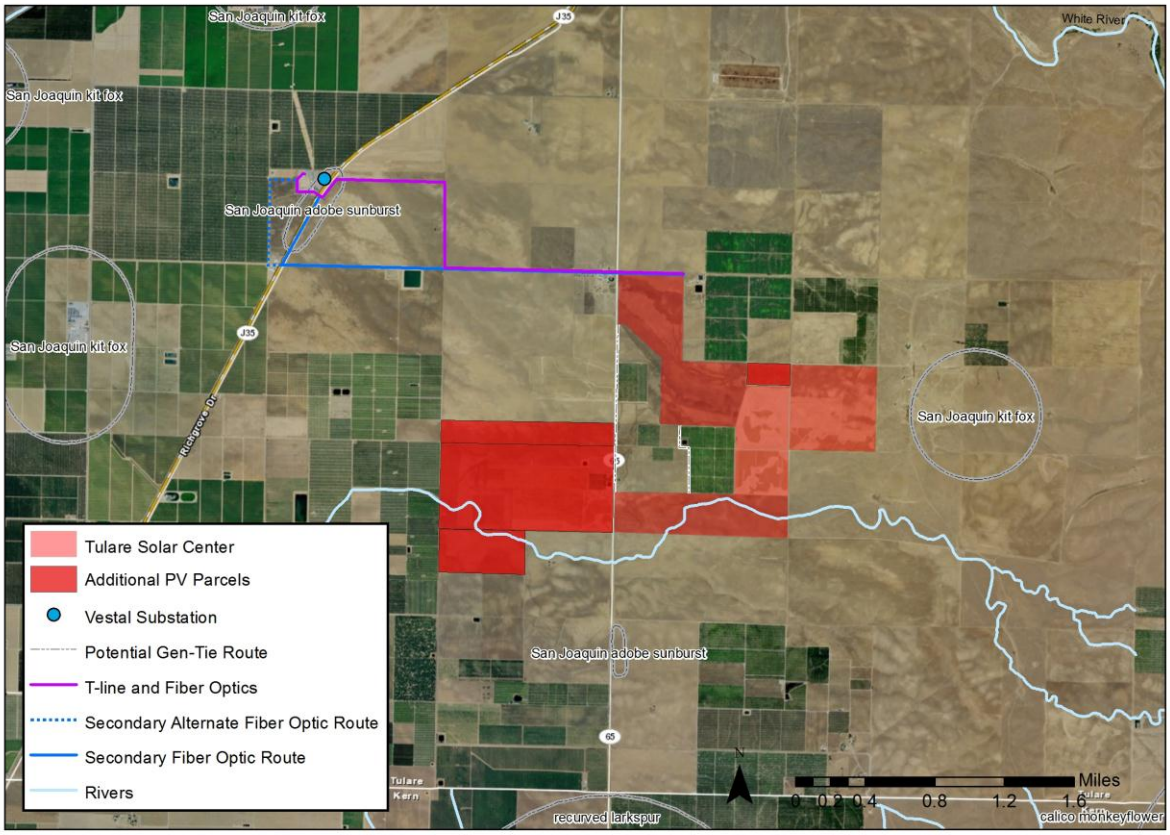

Figure 2. CDFG's special-status species records near the proposed Tulare Solar Site (CDFG 2012a).

5.0 FIELD INVESTIGATION METHODS AND RESULTS

Multiple field investigations were conducted for the Tulare Solar Center Project. The dates and results are as follows:

30 November 2011, Wednesday - ERM biologists visited the Project Site at the beginning of the wet season, when temperatures were approximately 44° F, and few plants were flowering. ERM completed the biological assessment within the footprint of the proposed Project Site plus an approximate 50-foot buffer around Project features such as access roads and utility line corridors, through a combination of walking transects and using 10x42 binoculars that allowed for 100 percent (%) visual coverage. Observations of habitat types, flora and fauna were noted and photographed. This November site visit did not occur during an active time of year for the San Joaquin kit fox or during the nesting bird season.

23 March 2012, Friday - ERM biologists visited the site when temperatures were approximately 67° F, to investigate a cluster of burrows that Southern California Edison (SCE) biologists identified as being potential habitat for burrowing owls (*Athene cunicularia*) or San Joaquin kit fox (*Vulpes macrotis mutica*). From the Vestal Substation there is a fence that heads south and parallel to County Route J35 for a few hundred feet, and then turns west – the cluster of burrows is near the corner where the fence turns west. In addition, SCE noted a number of burrows along the berm on the east side of the dirt road that heads north-south approximately 4,000 feet east of County Route J35 (i.e. County Road 224), where fiber optic cables are proposed; ERM biologists also resurveyed this berm. This survey occurred at the beginning of the nesting bird season, but prior to the most active season for San Joaquin kit fox which begins in May.

26 March 2012, Monday - Garcia and Associates' (GANDA) botanist Mark Bibbo conducted a rare plant survey for the San Joaquin adobe sunburst (*Pseudobahia peirsonii)* on either side of County Route J35 near the Vestal Substation, where there is an historic record for this species (CDFG 2012a). This survey was conducted during the flowering period for the San Joaquin adobe sunburst. And although this species was observed in full bloom at a nearby location, the adobe sunburst was not observed to be present at the historical record location near the Vestal Substation.

22 May 2012, Tuesday - ERM biologist Dana Ostfeld conducted a final site visit to survey an additional four (4) APNs totaling 495 acres of land that were added to the Project Site (see Figure 1 or 2 for

"Additional PV Parcels") after the previous surveys were conducted, and to resurvey those sites identified by SCE as being potentially biologically sensitive for special-status species and sensitive vegetation communities (previously surveyed on 23 March 2012). The weather was sunny and in the upper 70s.

ERM and GANDA biologists did not observe any special-status species[1]. The majority of the Project Site where solar panels are proposed is currently used for agricultural purposes and it is unlikely that the rare plant species or rare animal species exist in these areas. Most of the proposed utility alignments would occur along the shoulders of rural roads, which are composed primarily of ruderal species (see Section 5.2, below, for a description of habitats) and have a low potential of containing special-status species. However, areas that are not heavily tilled and replanted or influenced by weedy roadside species (e.g., the pasture lands west of Highway 65 along which the fiber optic lines and t-line upgrade alignments are proposed), could contain Threatened or Endangered species.

The field investigation specifically for wetlands included a wetlands reconnaissance. The wetland, habitat, and special-status species biological survey results for the Project Site are discussed in the following paragraphs.

5.1 WETLAND RECONNAISSANCE

The wetland reconnaissance field work consisted of verifying mapped wetlands (i.e., the blue line that is on topographic maps for the site) and looking for wetland areas that have not been previously identified on the Site. Sensitive species and habitats observed during the wetland reconnaissance were also noted to supplement the information obtained during the desktop review.

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[1] "Special-status species" includes all species that are listed and receive specific protection defined in federal or state endangered species legislation, as well as species not formally listed as threatened or endangered, but designated as "rare" or "sensitive" on the basis of adopted policies and expertise of state resource agencies or organizations, or policies adopted by local agencies such as counties, cities, and special districts to meet local conservation objectives.

Wetlands are determined based on the presence of three indicator parameters -- hydrophytic vegetation, wetland hydrology, and hydric soils -- in accordance with the Routine Determination Method outlined in the *United States Army Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0* (Corps, 2008). All three indicators must be present for an area to be considered a wetland.

Based on historical aerial photograph imagery, a small stream formerly traversed through the southern portion of APN 339-140-01, 339-140-08, and 339-140-10. It is clear that this stream no longer conveys water through the proposed PV parcels, as much of it has been plowed under and is used for agricultural purposes. Remnants of this former stream were observed in one small area near the central portion of APN 339-140-10, where there was a slight depression that could potentially hold water. Plants present here included Bermuda grass (*Cynodon dactylon*), cocklebur (*Xanthium strumarium*), and dallis grass (*Paspalum dilatatum*). These plants are not indicative of wetlands, based on the *National List of Plant Species That Occur in Wetlands: 1988 National Summary and 1993 Regional Supplement* (National List) (Reed 1993). Since all three indicators must be present for an area to be considered a wetland, no further investigation of the soil was warranted.

There are signs that at one time there was ponded water in an area approximately 10 feet wide and 30 feet long that is immediately north of an old culvert, on the west side of County Route J35, and towards the south end of the proposed secondary fiber optic alignment. Signs of previous ponded water here include a slight depression, a change in vegetation, and cracked soil. However it appears that water has not flown from this culvert and into this previous wetland area in some time, which is likely because of the currently empty reservoir to the west of the culvert. While a wetland may have once occurred here, it does not appear that this area currently receives much water to sustain any wetland qualities (i.e., wetland plants, soil, and hydrology). Whether or not this potential wetland has the plant, soil, and hydrology characteristics to be considered a wetland by the Corps is not relevant, because this area is isolated and therefore not under the Corps jurisdiction (see Section 3.1 – Wetlands above). However, the RWQCB takes jurisdiction over isolated wetlands, and therefore if this area is considered a wetland by the RWQCB, then any impacts to this area would require a RWQCB discharge permit.

5.2 *HABITAT TYPES*

Habitat types/plant communities observed within the Project Site included:

- Non-native annual grassland;
- Agriculturally developed; and
- Ruderal.

The following sections present general information about each of the habitat types with some portions derived from the California Wildlife Habitat Relationships manual (CDFG 2009).

5.2.1 *Non-native Annual Grassland*

Non-native annual plant species are the primary component of annual grasslands, which has taken over the historic perennial grasslands of this area. Annual grasslands at the Site appear either presently or historically to have been impacted by human use. They occur as their own habitat and also in conjunction with oak woodlands, riparian areas, wetlands, cropland, and several others. Precipitation in the fall and winter causes germination; plants grow slowly during the cooler winter months and more rapidly during the warmer spring months. During the summer months, large amounts of standing dead plant material are the dominant feature. Species in this community include numerous common non-native annual grasses, including oats (*Avena spp.*), and bromes (*Bromus hordaceus,* and *B. diandrus*). Associated herbs include mostly a mix of non-native species, including black mustard (*Brassica nigra*), wild radish (*Raphanus sativus*), clover (*Trifolium* sp.), filaree (*Erodium botrys*, *E. cicutarium*), jimson weed (*Datura stramonium*), and few native species such as blue-eyed grass (*Sisyrinchium bellum*). Wildlife species typically found in this habitat include black-tailed jackrabbit (*Lepus californicus*), California ground squirrel (*Spermophilus beecheyi*), western harvest mouse (*Reithrodontomys megalotis*), western fence lizard (*Thamnophis elegans vagrans*), common garter snake (*T. sirtalis*), western rattlesnake (*Crotalus oreganus*), and coyote (*Canis latrans*).

5.2.2 *Agriculturally Developed*

Agriculturally developed areas are heavily impacted by human activity, and support virtually no native vegetation. Most of the proposed Project Site is composed of wheat and barley, with ruderal plants such as bindweed (*Convolvulus arvensis*) and yellow star thistle (*Centaurea*

solstitialis) along roadsides and cleared areas. Typically the soils have been amended and altered, and surface hydrology is also enhanced and impacted. Depending on the type of plants being grown, water may be added to the soil during times of year when soil would otherwise dry out and most plants would die off and go dormant. Agricultural fields and orchards attract many types of rodents and other small mammals due to an abundant supply of food and water. This attracts birds of prey such as falcons and hawks, and oftentimes owls. In addition, agricultural areas may provide habitat for transient mammals, reptiles, amphibians, and birds.

5.2.3 Ruderal

Ruderal habitat is characterized by a high level of site disturbance from humans, where the native vegetation has been removed or heavily altered. Vegetation typically consists of non-native ornamental grasses, flowers, shrubs and trees that spread from humans or human equipment. Ruderal communities do not support the diversity of wildlife characteristic of healthy natural communities, but many native wildlife species have adapted to ruderal areas, e.g., red-tailed hawk, American crow (*Corvus brachyrhynchos*), raccoon, and coyote. Animals associated with ruderal communities include California ground squirrel, European starling (*Sturnus vulgaris*), rock dove *(Columba livia*), Virginia opossum (*Didelphis virginiana*), and Norway rat (*Rattus norvegicus*).

5.3 SPECIES OF CONCERN

There are 14 special-status species that were listed as having records in or near the Project Area, or the potential to occur in the Project area, as identified by a CNDDB query (CDFG 2012) (see Figure 2 for record locations near the Project area, and Appendix A for the CNDDB list of species) and the Sacramento USFWS Species List database (USFWS 2012) for the Richgrove and Quincy School quadrangles. These 14 species, their threatened and endangered status, a brief description of their habitat requirements, and their potential for occurrence in the Project area, are presented in Table 1 below.

Table 1 Special-Status Species with the Potential to Occur in the Proposed Project Vicinity

Common Name *Scientific Name*	**Status (Federal/State/ CNPS)**	**Habitat Requirements**	**Potential for Occurrence in Project area**
Species Listed or Proposed for Listing			
Plants			
California jewel-flower *Caulanthus californicus*	FE/CE/1B.1	Sandy soils, within chenopod scrub, pinyon and juniper woodland, and valley and foothill grassland.	**Low**. There is a historic CNDDB record of this species approximately 1.5 miles northwest of the Project Site, but CDFG reports that this occurrence is presumed extirpated (CDFG 2012a). Habitat for this species no longer occurs at the Project Site.
San Joaquin adobe sunburst *Pseudobahia peirsonii*	FT/CE/1B.1	Cismontane woodland, and valley and foothill grassland.	**Low.** Habitat no longer occurs at this Project Site. There is an historic record for this species along Route J35 near the Vestal Substation (CDFG 2012a), but surveys conducted for this species in March 2012 failed to detect this species (GANDA 2012), and this species is presumed extirpated from the area.
Mammals			
Tipton kangaroo rat *Dipodomys nitratoides nitratoides*	FE/CE	Inhabits alkali desert scrub habitat and herbaceous habitat, with level or nearly level terrain, which is not subject to flooding. Burrows are often in slightly elevated mounds, berms of roads, canal embankments, and railroad beds.	**Low**. Nearest CNDDB record is over 10 miles west of the Project Site (CDFG 2012a). Habitat in the Project Site is generally poor quality for this species.
San Joaquin kit fox	FE/CT	Chenopod scrub, grasslands, sometimes	Moderate. CNDDB records for this species surround the Project

Common Name *Scientific Name*	Status (Federal/State/ CNPS)	Habitat Requirements	Potential for Occurrence in Project area
Vulpes macrotis mutica		forages in agricultural areas.	Site, but they are almost all records from the 1970s (CDFG 2012a). While this species historically occurred in the area, their habitat has been drastically reduced by urbanization and agriculture. Nevertheless, the San Joaquin kit fox may inhabit grazed, non-irrigated grasslands, and also live next to and forage in tilled or fallow fields, irrigated row crops, orchards, and vineyards (USFWS 1998), and this type of habitat is present at the Project Site.
Invertebrates			
Vernal pool fairy shrimp *Branchinecta lynchi*	FT/--	Vernal pools in the grasslands of California.	**Low.** Nearest CNDDB record is approximately 3 miles north of the Project Site (CDFG 2012a). No vernal pools within the Project Site.
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT/--	Occurs only in the California Central Valley in association with blue elderberry (*Sambucus mexicana*); eggs laid in 1" plus diameter elderberry trees with a preference shown for "stressed" plants.	**Low.** No blue elderberry observed within or near the Project Site.
Fish			
Delta smelt *Hypomesus transpacificus*	FT/CE	Sacramento-San Joaquin Province, permanent streams with fishes.	**Low.** No nearby records for this species.
Amphibians			
California red-legged frog	FT/CSC	Breed in stock ponds, pools, and slow-moving streams with emergent	**Low.** No suitable pools of water with emergent vegetation were observed within the proposed

Common Name *Scientific Name*	Status (Federal/State/ CNPS)	Habitat Requirements	Potential for Occurrence in Project area
Rana draytonii		vegetation for escape cover and egg attachment.	cable alignment.
Reptiles			
Blunt-nosed leopard lizard *Gambelia sila*	FE/CE	San Joaquin Valley region in expansive, arid areas with scattered vegetation. They are absent from areas with steep slopes and dense vegetation, and areas subject to seasonal flooding.	**Low.** No nearby CNDDB records for this species (CDFG 2012a). Habitat in the Project Area is generally unsuitable for this species.
Giant garter snake *Thamnophis gigas*	FT/CT	Inhabits marshes, sloughs, ponds, small lakes, low gradient streams, and other waterways and agricultural wetlands, such as irrigation and drainage canals.	**Low.** No suitable habitat for this species occurs in the Project Site, and there are no nearby CNDDB records for this species (CDFG 2012a).
Birds			
California condor *Gymnogyps californianus*	FE/CE	Large areas of remote country for foraging, roosting, and nesting. Condors roost on large trees or snags, or on isolated rocky outcrops and cliffs.	**Low.** The Project Site is absent of large trees and snags for roosting and nesting.
Federal or State Species of Special Concern			
Plants			
Recurved larkspur *Delphinium recurvatum*	-- / -- / 1B.2	Chenopod scrub, cismontane woodland, and valley and foothill grassland.	**Low**. The nearest CNDDB record is approximately 1.5 miles south of the proposed Tulare Solar Site, but this record is over 50 years old (CDFG 2012a). There is currently no suitable habitat for this species in the Project Site.

Common Name *Scientific Name*	**Status (Federal/State/ CNPS)**	**Habitat Requirements**	**Potential for Occurrence in Project area**
Calico monkeyflower *Mimulus pictus*	--/--/1B.2	Granitic, disturbed areas in broadleafed upland forest and cismontane woodland.	**Low**. Nearest CNDDB record is 2.5 miles southeast of the proposed Tulare Solar Site (CDFG 2012a). No suitable habitat occurs in the Project Site.
Birds			
Burrowing owl *Athene cunicularia*	--/CSC	Open, dry grasslands, deserts, and sometimes ruderal areas along levees. Nests in burrows.	**Moderate.** The nearest CNDDB record for this species is a 2007 occurrence approximately 3.5 miles northeast of the Project Site (CDFG 2012a), although most known burrowing owl occurrences in Tulare County are on the southwest side of Tulare County, and not the southeastern portion of the County where the Project Site is located (Wildlands Inc. 2004). No burrowing owls were observed in the Project Site; however there are burrows in some areas that are suitable in size for this species.

Status Codes:

Federal (USFWS)

FE = Federal-Endangered
FC = Federal Candidate for Listing
FT = Federal-Threatened

State (CDFG)

CE = California Endangered
CT = California Threatened
WL = Watch List
FP = California Fully Protected
CSC = California Species of Special Concern
* = Special Animal – listed on CDFG's Special Animal list

California Native Plant Society (CNPS)

1B = Plants rare, threatened, or endangered in the state and elsewhere.
1B.1 = Seriously threatened in California.
1B.2 = Rare, threatened, or endangered in California and elsewhere; fairly threatened in California.
2 = Plants rare, threatened, or endangered in the state, but common elsewhere.
2.2 = Rare, threatened, or endangered in California, not elsewhere; fairly threatened in California.
2.3 = Rare, threatened, or endangered in California, not elsewhere; not very threatened in California.

Of the species listed in Table 1 above, most are unlikely to occur in the Project Site, as the Site is highly disturbed by years of agricultural activities, and native habitat is no longer present here. One species occurrence is within the Project Site – the San Joaquin adobe sunburst. In addition, two species have a moderate potential to occur in the Project Site – the San Joaquin kit fox and the burrowing owl. These three species are discussed in the following paragraphs.

San Joaquin Adobe Sunburst. On 26 March 2012, GANDA conducted a focused survey for the San Joaquin adobe sunburst along the 600-foot-long portion of County Route J35, where there is an historic CNDDB record for this species (CDFG 2012a), presumed extirpated[2], and where fiber optic cables are proposed for this Project (GANDA 2012). The GANDA botanist surveyed the 50 feet of vegetation on either side of the existing utility line, in accordance with California Department of Fish and Game's (CDFG) *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009a). The survey area included the County Route J35 road shoulder which was devoid of vegetation, and edges of agricultural fields that were recently disc-plowed. No San Joaquin adobe sunburst were observed in this survey area, and GANDA determined that this species is no longer present here and no further surveys are necessary, because: (1) none were detected in this survey area during their March 2012 survey; and (2) GANDA observed this species in bloom approximately 20 miles to the north of the survey area, at only slightly higher elevation (680 feet versus 500 feet), and on the same day of their survey along County Route J35. So, if this species were present here, then it would likely be in bloom and identifiable (GANDA 2012).

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[2] The CNDDB record for the San Joaquin adobe sunburst is based on a collection made in 1965. During subsequent visits to the site in 1974, 1990, and 2010, it was documented that the landscape was wholly converted to agriculture and no plants were observed here since the original collection; therefore, CDFG concluded that this population is likely extirpated (CDFG 2012).

It is unlikely that the San Joaquin adobe sunburst or any other special-status plants occur in the Project Site, based on the highly disturbed nature of the Site and the lack of native vegetation, as well as the negative survey results of special-status plants during ERM and GANDA's November 2011 and March 2012 surveys. Therefore, no further plant surveys are necessary.

San Joaquin Kit Fox. There are several records of this species in the vicinity of the Project Site, although most are from 1975 and none are current (CDFG 2011). Most of the Project Site lacks kit fox habitat, as it is regularly disc-plowed or planted with kiwi, alfalfa, and other crops, and lacks burrows. However the San Joaquin kit fox may inhabit grazed, non-irrigated grasslands, and also live next to and forage in tilled or fallow fields, irrigated row crops, orchards, and vineyards (USFWS 1998), and this type of habitat is present at the Project Site.

During their reconnaissance-level biological survey of the Project Site, ERM biologists searched for burrows potentially suitable for San Joaquin kit fox (i.e., burrows 4 to 10 inches in diameter, that are round or oval in shape, and often with multiple openings leading to the same den). No potential kit fox burrows were identified, but the biological survey did not include an exhaustive burrow survey of the Project Site, the survey did not occur during the optimum survey period for the kit fox (the optimum survey period is 1 May to 30 September), and even if an exhaustive survey of the potential kit fox burrows at the Site was conducted and none were identified, that does not preclude the possibility of them moving into the site prior to Project construction.

While no active kit fox burrows were observed during the November 2011 reconnaissance-level biological survey of the Project Site, ERM biologists noted burrows along the periphery of several lots and roadside berms, and there could be burrows suitable in size for the San Joaquin kit fox in these areas (these potential habitat areas are marked with orange polygons on Figure 3). Thus, this species has a low-moderate potential to occur in the Project Site. If present, the San Joaquin kit fox could be directly impacted by Project construction activities (e.g., injury or mortality from construction equipment, or filling and entombing kit fox in occupied burrows in the Project Site), or indirectly impacted (e.g., reduced foraging habitat; displacement of coyotes, badgers, and other competitors of the kit fox that then move into occupied kit fox habitat and compete for available burrows; or increased road kill of kit fox on nearby roads, resulting from increased traffic to the Tulare Solar Site).

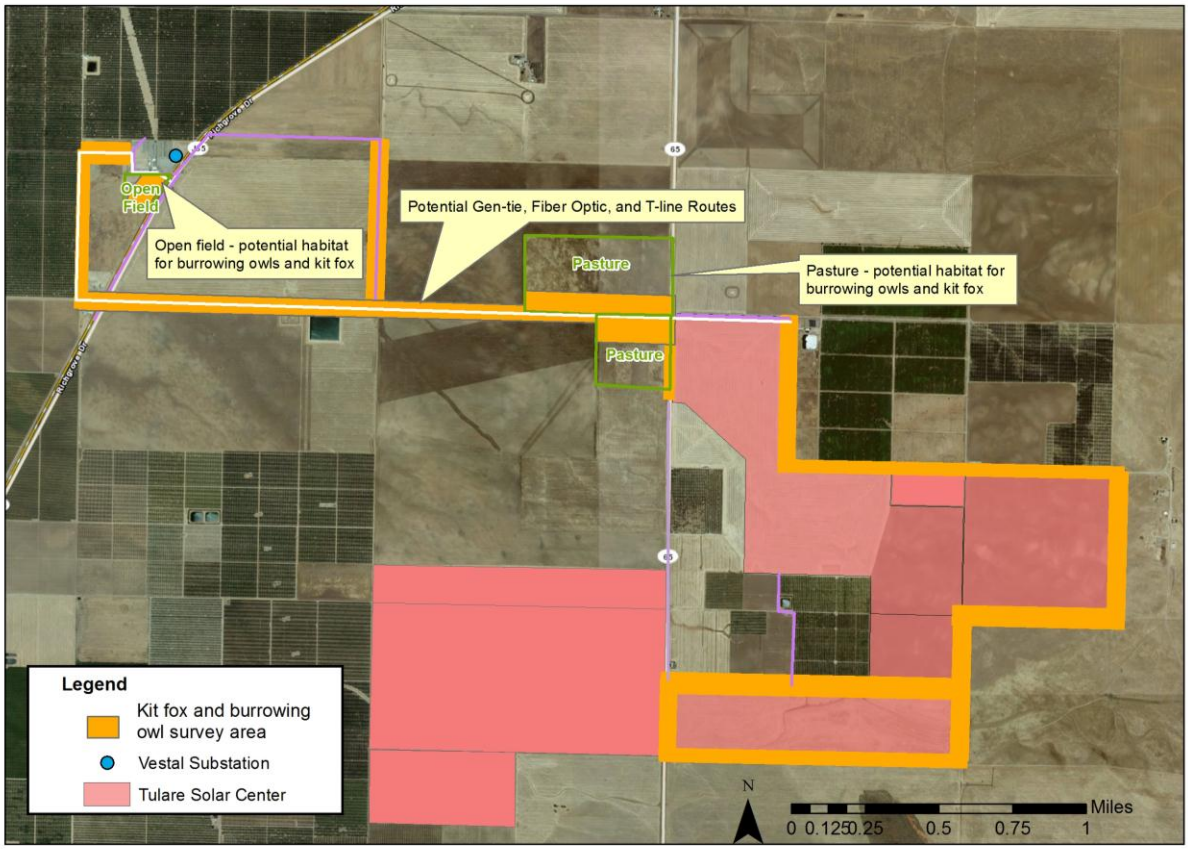

Figure 3. Locations identified by ERM biologists, where kit fox and burrowing owl burrows could occur (in orange and green), and areas where future San Joaquin kit fox and burrowing owl surveys should be conducted for this Project (in orange).

*Burrowing Owl. T*here are no CNDDB records for burrowing owls (*Athene cunicularia*) in the Project Site area or immediate vicinity (CDFG 2011). The nearest CNDDB record for this species is a 2007 occurrence approximately 3.5 miles northeast of the Project Site (CDFG 2011), although most known burrowing owl occurrences in Tulare County are on the southwest side of Tulare County, and not the southeastern portion of the County where the Project Site is located (Wildlands Inc. 2004).

Most of the area where solar panels are proposed is disc-plowed, planted with crops, and otherwise heavily disturbed by agricultural activities, and consequently lacks burrows suitable in size for the burrowing owl. Where wheat and barley is growing (which includes most of the Project Site where the PV panels are proposed), these grasses reach two feet or more in height during the summer months. These tall grasses create unsuitable habitat for burrowing owls, which need low-lying vegetation so that they

can easily watch for predators from their burrow. However, burrow complexes occur along the periphery of some fields where solar panels and utility lines are proposed, particularly in bermed areas. Specific areas identified by ERM biologists where burrows occur that could be potential habitat for burrowing owls are shown in Figure 3, and include the southeast edge of lot 339-100-07; along the southern edge of lot 339-140-10; along the western edge of lot 339-110-06 (the east side of Route 65); along the proposed t-line and fiber optic line that would head north along the east side of a dirt farm road, which is parallel to and west of Highway 65; and along the fenceline that heads south from the Vestal Substation and parallel to County Route J35 just before the fence turns west. Burrows may also occur in the pasture fields immediately west of Highway 65, and in the non-native grassland immediately south of the Vestal Substation.

While ERM biologists did not observe any signs of burrowing owl in the Project Site (e.g., burrowing owls, owl pellets, or white wash) during their November 2011 (non-nesting season) and March 2012 (nesting season) surveys, there is a moderate potential for this species to occupy suitably sized burrows at another time of year, or during another year.

If burrowing owls are present, they could be directly impacted by construction activities (e.g., filling of occupied burrows), or indirectly impacted (e.g., construction activities could result in excessive noise that stresses out the birds and causes them to abandon their nest). Furthermore, long-term placement of solar panels in this area could eliminate owls from burrowing and foraging in the area, if they are present.

Nesting, Native Birds. As described in Section 3.3 above, most native birds are protected from "take" while nesting, under federal and state law. Native birds may nest in fields, bushes, trees, and on utility poles. Although the November 2011 surveys were not conducted during the nesting bird season (February through August), a large nest was observed on the top of a utility pole along the dirt road between parcels 339-110-06 and 339-100-07 (see photo log in Appendix B). In addition, during the March 2012 surveys for burrowing owl burrows conducted near the Vestal Substation, ERM observed several nests along the walls of the Vestal Substation. Based on these nest sightings and the abundance of locations where birds could possibly nest in the Project Site, there is a high likelihood that native birds nest in and near the Site.

If nesting, native birds are present, they could be directly impacted by construction activities (e.g., destruction of active nests, such as the one on

the utility pole), indirectly impacted by construction activities (e.g., construction noise could disturb and stress out the nesting birds, and cause them to abandon their nest), or directly impacted by operation activities (e.g., solar panels could cover and make inaccessible the current foraging habitat for these birds).

5.4 WILDLIFE MOVEMENT CORRIDORS

Rugged terrain, changes in vegetation, or areas of human disturbance or urban development can fragment wildlife habitats and impede wildlife movement between areas of suitable habitat. This fragmentation creates isolated "islands" of vegetation that may not provide sufficient area to accommodate sustainable populations, and can adversely affect genetic and species diversity. Wildlife movement corridors link habitat areas and mitigate the effects of this fragmentation by allowing animals to move between remaining habitats, in turn allowing depleted populations to be replenished and promoting genetic exchange between separate populations.

Wildlife movement corridors usually occur where there are relatively large areas of open space composed of undeveloped habitat, ideally native habitat. Smaller, notable wildlife movement corridors include creeks and riparian areas. One creek historically ran west-east through the southern portion of the Project area, and may have been a good wildlife movement corridor at one time, but this creek has been converted to agricultural land and is no longer present (see 5.1 Wetland Reconnaissance, below). A majority of the Project site is agricultural land, and it is surrounded by more agricultural land – while agricultural land may be attractive to wildlife as movement corridor in otherwise urban, developed landscapes, there is nothing at this Project site that would make it more attractive as a wildlife movement corridor than adjacent parcels; land mammals moving north-south through the area most likely stay further east of the Project site, in the contiguous, native, undeveloped habitat. Furthermore, the California Wilderness Coalition (Calwild 2001) has identified important wildlife movement linkages throughout the state, but none within the Project area.

6.0 CONCLUSIONS AND RECOMMENDATIONS

ERM and GANDA biologists did not observe any special-status species at the proposed Project Site during their November 2011, March 2012, and May 2012 site visits. However, based on the condition of the Project Site, there is potential for the San Joaquin kit fox, burrowing owl, or other native, nesting birds to occur at the Site and be impacted by the proposed Project activities. In addition, there is one area that appears to have wetland features along the south side of the secondary fiber optic route, and which could be impacted by Project activities. Based on observations made at the Site, ERM recommends the following:

- *San Joaquin kit fox surveys*. A qualified biologist should conduct surveys for the San Joaquin kit fox within 200 feet of areas with potential kit fox habitat (marked with orange polygons on Figure 3). These surveys should occur between 14 and 30 days prior to the start of construction activities, in accordance with the USFWS' *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance* (1999). Surveys should identify kit fox habitat features on the Site and evaluate use by kit fox, and if possible, assess the potential impacts to the kit fox by the proposed Tulare Solar Project. The status of all dens should be determined and mapped (USFWS 1999).

  Written results of the preconstruction/preactivity surveys must be received by the USFWS within five days after survey completion and prior to the start of ground disturbance and/or construction activities. If a natal/pupping den is discovered within the Project Site or within 200-feet of the Project boundary, the USFWS shall be notified immediately. If the preconstruction/preactivity survey reveals an active natal pupping or new information, Wellhead should contact the USFWS immediately to obtain the necessary take authorization/permit (USFWS 1999).

- *Burrowing owl surveys*. As recommended by CDFG (Lori Bono, CDFG, pers comm, 5 April 2012), and in accordance with CDFG's 2012 *Staff Report on Burrowing Owl Mitigation*, a qualified biologist should conduct three surveys for burrowing owls where potential burrowing owl habitat occurs within 500 feet of Project activities (i.e., areas marked with orange polygons on Figure 3). Surveys should occur during the peak breeding season for this species (15 April through 15 July), and spaced three weeks apart.

If active burrowing owl burrows are identified within 500 feet of the Site, then avoidance, take avoidance surveys, site surveillance, minimization, and buffer mitigation measures shall be implemented, in accordance with the CDFG *Staff Report* (2012b) and direct consultation with CDFG.

- *Nesting bird surveys*. If Project construction activities are going to occur within the nesting bird season (i.e., 15 February through 31 August), then within two weeks prior to construction a visual nesting bird survey should be conducted of all overhead powerline structures/facilities, grasslands, and trees within 500 feet of proposed activities. If an active nest of a native bird species is encountered, the nest should not be disturbed until chicks have fledged or otherwise abandoned their nest, which could be for several weeks. In addition, CDFG should be consulted to determine a suitable avoidance buffer around the active nest.
- *Wetland*. As discussed above, there is an area that has at one time been inundated with water, and may be considered an isolated wetland that is under the jurisdiction of the Central Valley RWQCB. This potential wetland area occurs along the west side of County Route J35, where the secondary fiber route is proposed, and should be flagged for avoidance by a qualified biologist, before any fiber optic cables are hung from existing utility poles along this stretch of County Route J35. No heavy equipment or other ground disturbance should occur within the boundaries of this flagged area.

7.0 *LITERATURE CITED*

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Appendix A

CNDDB List for Richgrove and Quincy School Quadrangles

Selected Elements by Scientific Name

California Department of Fish and Game

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFG SSC or FP
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S2	SSC
Caulanthus californicus California jewel-flower	PDBRA31010	Endangered	Endangered	G1	S1	1B.1
Delphinium recurvatum recurved larkspur	PDRAN0B1J0	None	None	G3	S3	1B.2
Mimulus pictus calico monkeyflower	PDSCR1B240	None	None	G2	S2.2	1B.2
Pseudobahia peirsonii San Joaquin adobe sunburst	PDAST7P030	Threatened	Endangered	G1	S1	1B.1
Vulpes macrotis mutica San Joaquin kit fox	AMAJA03041	Endangered	Threatened	G4T2T3	S2S3	

Record Count: 6

Appendix B

Photographs / Photolog

ERM

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Wellhead Renewable Energy, LLC	Tulare County, CA	0141599

Photo No.	Date:
1	30 Nov 2011

Direction Photo Taken:

East

Description:

View of typical Ruderal Annual Grassland habit at the Site. Photo taken at APN 339-110-06.

Photo No.	Date:
2	30 Nov 2011

Direction Photo Taken:

North

Description:

View of typical agricultural habitat found at the Site. Photo taken at APN 339-140-10. Area had recently been plowed in preparation for planting.

ERM

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Wellhead Renewable Energy, LLC	Tulare County, CA	0141599

Photo No.	Date:
3	30 Nov 2011

Direction Photo Taken:

West

Description:

View of the former stream near the eastern boundary of APN 339-140-10.

Photo No.	Date:
4	30 Nov 2011

Direction Photo Taken:

Southeast

Description:

View of overhead power lines with crow nest located on the dirt road between APN 339-110-06 and APN 339-100-07.

ERM

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Wellhead Renewable Energy, LLC	Tulare County, CA	0141599

Photo No.	Date:
5	30 Nov 2011

Direction Photo Taken:

West

Description:

View of typical Ruderal habitat located within the Site. Photo taken along potential Gen-tie, Fiber Optic, and T-line Route just west of the intersection with Highway 65.

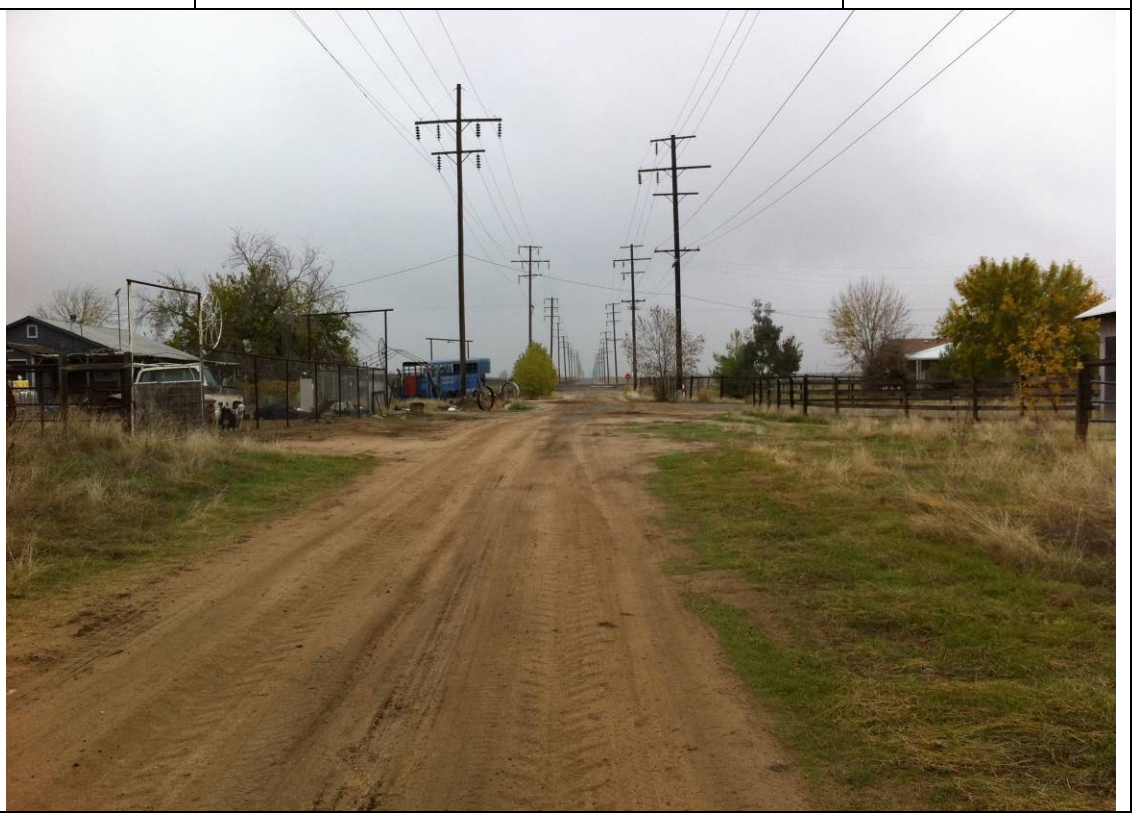

Photo No.	Date:
6	30 Nov 2011

Direction Photo Taken:

West

Description:

View of Ruderal Annual Grassland (right of photo) and Agriculture land (left of photo) habitat located along potential Gen-tie, Fiber Optic, and T-line Route just east of the Vestal Substation.

ERM

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Wellhead Renewable Energy, LLC	Tulare County, CA	0141599

Photo No.	Date:
7	30 Nov 2011

Direction Photo Taken:

South

Description:

View of typical habitat for proposed additional kit fox burrow surveys. Photo taken along west boundary of APN 339-140-10.

Photo No.	Date:
8	May 22, 2012

Direction Photo Taken:

Southwest

Description:

View of typical wheat and barley field, taken from the east side (along Route 65) of APN 339-140-01.

ERM

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Wellhead Renewable Energy, LLC	Tulare County, CA	0141599

Photo No.	Date:
9	May 22, 2012

Direction Photo Taken:

Southwest

Description:

View of typical wheat and barley field, taken from the north side of APN 339-140-08.

Photo No.	Date:
10	May 22, 2012

Direction Photo Taken:

West

Description:

View of abandoned vineyard in APN 339-110-16.

ERM

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Wellhead Renewable Energy, LLC	Tulare County, CA	0141599

Photo No.	Date:
11	May 22, 2012

Direction Photo Taken:

North

Description:

View of potential wetland near old culvert, along the secondary fiber optic alignment on the west side of County Road J35. Old utility lines hang down here.

Appendix D

Cultural Resources Survey Report for the Proposed, Tulare Solar Center

RSO Consulting

Cultural and Historical Resource Management

January 31, 2012

Ms. Emily Bowen, LEED AP
Provost and Pritchard Engineering
130 N. Garden Street
Visalia, CA 93291

Re: Cultural Resources Records Search for the Wellhead Solar Project Area, Section 23, 23, and 27; Township 24S, Range 27E, Richgrove, CA 7.5' USGS Topographic Quadrangle (RS #12-028; RSOC #201202)

Dear Ms. Bowen:

Per your request, a cultural resources records search (RS#12-028; RSOC Project No. 201202) was conducted for the above-referenced project on January 31, 2012, at the Southern San Joaquin Valley Historical Resources Information Center at California State University, Bakersfield. The Project Area (PA) is the future location of the Wellhead Solar Project Area, approximately 650 acres located on Section 23, 23, and 27; T24S, R27E, Richgrove, CA 7.5' USGS Topographic Quadrangle. The records search included an examination of the *National Register of Historic Places*, the *California Register of Historical Resources*, *California Points of Historical Interest*, *California Inventory of Historic Resources*, *California State Historic Landmarks Registry*, and the HRIC files of pertinent historical and archaeological data.

The results of the records search showed that cultural resources surveys have been performed on very limited portions of the PA; specifically, along the section boundaries between Sections 22 and 23, and Sections 26 and 27 (TU-101; Sutton and Pruett 1989); and the western edge of Sections 22 and 27 (TU-1047; Gassner 2001) (see Figure 1). These surveys were restricted to existing roads and road shoulders, or along the Section boundaries, and *not on the interior of the Sections*. No archaeological resources have been recorded within the Project Area or within one-half mile of the Project Area.

The vast majority of the subject land has not been surveyed and given the earlier historical presence of east-west trending seasonal streams in the northern and southern half of the PA, and the range of altitudes throughout the PA, the possibility remains that cultural resources may exist there and may be identifiable at this time. We recommend that the Project Area be surveyed by a qualified archaeologist prior to development or construction activities.

The invoice for this records search is enclosed. If you have any further questions or concerns, please feel free to contact me at 661-663-8671 or by email at rso1consulting@gmail.com

Sincerely,

Rebecca S. Orfila, M.A., RPA
Principal Investigator

References

Sutton, Mark and Catherine Pruett
1989 Archaeological Inventory and Assessment of SCE's Kern River #3 Hydroelectric Project, Kern and Tulare Counties, California.

Gassner, Sarah
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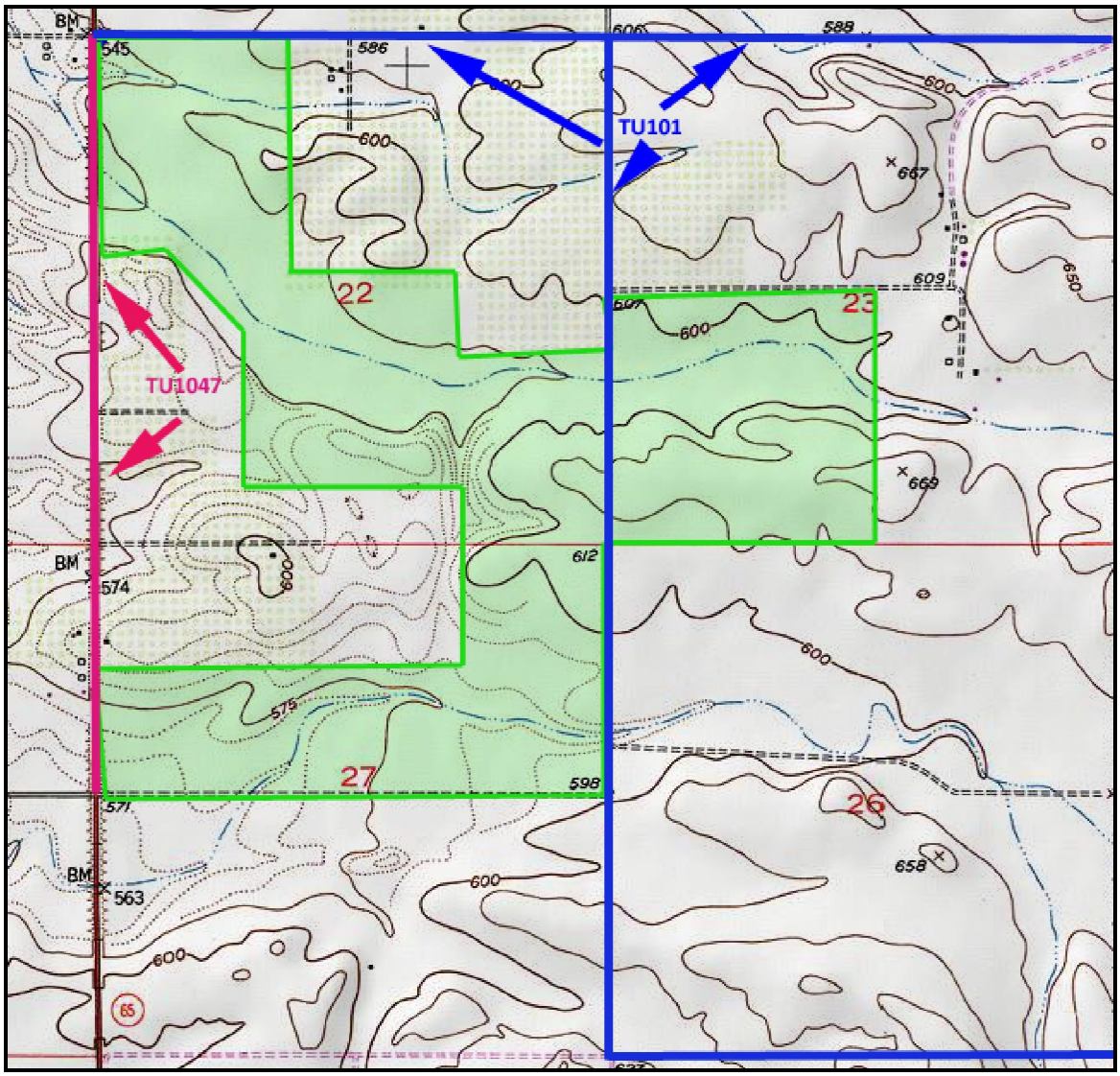

Fig. 1. Location map of Project Area (shaded in green) and previously performed surveys; adapted from the Richgrove, CA, USGS 7.5' topographic quadrangle.

CULTURAL RESOURCES SURVEY REPORT FOR THE PROPOSED 1,064-ACRE TULARE SOLAR CENTER, NEAR RICHGROVE, TULARE COUNTY, CALIFORNIA.

Submitted to:
Gary Franzen
Tulare Solar Center, LLC
650 Bercut Drive, Suite C
Sacramento, CA 95811-0100

and

Southern California Edison Company
Biological and Archaeological Resources
1218 South Fifth Avenue
Monrovia, CA 91016

Submitted by:
Hubert Switalski and Andrea Bardsley
AMEC Environment and Infrastructure, Inc.
5518 Sierra Caves Ave.
Bakersfield, CA 93313

Final Report

September 2012

CULTURAL RESOURCES SURVEY REPORT FOR THE PROPOSED 1,064-ACRE TULARE SOLAR CENTER, NEAR RICHGROVE, TULARE COUNTY, CALIFORNIA.

September 2012

WO: N/A

Submitted to:
Tulare Solar Center, LLC
650 Bercut Drive, Suite C
Sacramento, CA 95811-0100

and

Southern California Edison Company
Biological and Archaeological Resources
1218 South Fifth Avenue
Monrovia, CA 91016

Submitted by:
Hubert Switalski and Andrea Bardsley
AMEC Environment and Infrastructure, Inc.
5518 Sierra Caves Avenue
Bakersfield, CA 93313

U.S.G.S 7.5-minute topographic quadrangle(s): Richgrove, CA (1973)

City and County: Richgrove, Tulare County

Permit No: N/A

Authorization No.: N/A

Dates of Field Survey: July 16 to August 6, 2012

Total acreage of lands surveyed: 1,122

Total miles surveyed (if linear): 4.2

Survey Data Shapefile Provided: No

Site Data Shapefile Provided: No

Cultural Resources Identified in Project Area: 4

Previously Recorded Resources in Project Area: 0

Newly Recorded Resources in Project Area: 4

Resources Eligible for National/California Register: 0

Resources Recommended as Eligible for National/California Register: 1

Resources Recommended as Not Eligible for National/California Register: 3

Cover page: Overview of the Project Area taken from the entrance to the Vestal Substation, view northeast (AMEC IMG_0835).

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APPENDICES

1.0 MANAGEMENT SUMMARY

Between July 16 and August 6, 2012, AMEC Environment and Infrastructure, Inc. (AMEC) conducted a Phase I cultural resources study for the proposed installation of a photovoltaic solar power generation facility being developed by Tulare Solar Center, LLC (TSC) approximately three miles northeast of the agricultural community of Richgrove in an unincorporated portion of Tulare County. The proposed project is a solar energy generation facility that will consist of 1) a solar field of photovoltaic (PV) panels mounted on steel and aluminum structures; 2) civil infrastructure including driveways, substations, fencing, support structures and facilities; 3) an electrical collection systems that aggregates the output from the PV panels and converts the electricity from direct to alternating current; and 4) a 66kV generation-tie (gen-tie) power line from the solar generation area to the point of interconnection via the existing Southern California Edison Company (SCE) Vestal-Kern River No. 3 66kV transmission line and to the existing SCE Vestal substation. The project consists of 1,064 acres for the solar generation facilities and approximately 78 acres for the proposed gen-tie alignment along the Vestal-Kern River No. 3 transmission line, for a total of 1,142 acres. AMEC archaeologists surveyed a total of 1,122 acres associated with the Project Area.

The purpose of this study was to document any cultural resources located within the Project Area that could be affected by the proposed project. The investigation was conducted in compliance with the California Environmental Quality Act (CEQA) as amended (Public Resources Code §21000 et seq.) and pursuant to the *Guidelines for Implementation of the California Environmental Quality Act* (California Code of Regulations, Title 14 §15000 et seq.). The archaeological study consisted of a cultural resources records search conducted at the Southern San Joaquin Valley Archaeological Information Center (SSJVAIC), located at California State University, Bakersfield (CSUB), as well as an intensive pedestrian survey of the Project Area. Additionally, the Native American Heritage Commission (NAHC) in Sacramento and the Natural History Museum (NHM) in Los Angeles were contacted regarding the Project's potential impacts on Native American sacred sites and paleontological resources, respectively.

The survey resulted in the discovery of four new, previously undocumented resources within the Project Area. Resource 54-004831 represents remnants of a historic water storage/irrigation tank that has been removed with only concrete footings remaining in place; thus, the resource is not eligible for nomination to the California Register of Historic Resources (CRHR).

Resource 54-004832 which represents portion of the Big Creek No. 3 transmission line appears to be eligible to the CRHR and the NRHP as it was constructed during the period of significance for the Big Creek Hydroelectric System per eligibility Criteria A, B, and C. While the eligible resource (54-004832) intersects the current Project Area, the proposed project will not replace, alter, or adversely affect any portion of the transmission line.

Resource 54-004833 represents a historic telegraph/telephone line associated with the Southern Pacific Railroad and while intact does not appear to be eligible for nomination to the CRHR.

The abandoned Southern Pacific Railroad segment (54-004834) between Famoso and Porterville is no longer in existence; thus it is not eligible for nomination to the CRHR. Based on the findings of the current study no additional research or additional archaeological studies are recommended at this time.

2.0 REGULATORY FRAMEWORK

This proposed project is subject to compliance with the California Environmental Quality Act (CEQA) requirements regarding cultural resources on lands proposed for development. CEQA (Public Resources Code Sections 21000 etc.) requires that before approving most discretionary projects, the Lead Agency (Tulare County) must identify and examine any significant adverse environmental effects that may result from activities associated with such projects (Public Resources Code Sections 21083.2 and 21084.1). CEQA explicitly requires that the initial study examine whether the project may have a significant effect on "unique archaeological resources." Under these requirements, a cultural resources inventory was conducted in order to determine impacts of the proposed project on cultural resources potentially eligible for nomination to the California Register of Historical Resources (CRHR).

The assessment of project impacts on cultural resources under CEQA is a two step process: 1) determine whether the Project Area contains cultural resources (defined as prehistoric archaeological, historic archaeological, or historic architectural resources), and, if the Project Area is found to contain a cultural resource(s), then 2) determine whether project would cause a substantial adverse change to the resource. A brief discussion of Paleontology is also discussed within this report, although, fossil resources and fossil finds may be more closely associated with aspects of geology and biology.

The Project Area includes the 1,064 acres designated for the solar PV power generating facility as well as the 30-meter buffer on each side of the Vestal-Kern River No. 3 66kV transmission line that will be used to interconnect the new facility with the existing SCE Vestal Substation (approximately 78 acres), for the total of 1,142 acres. It is expected that any potential adverse impacts arising from the proposed project will be contained within this acreage. The Project Area consists of the PV solar power generation facility and along the proposed gen-tie interconnect route between the proposed facility and the Vestal substation.

3.0 PROJECT DESCRIPTION

Between July 16 and August 6, 2012, AMEC conducted a Phase I cultural resources study on behalf of TSC for the proposed installation of a solar PV generating facility on a multi parcel site near the small agricultural community of Richgrove. The proposed work includes construction of a solar photovoltaic generating facility comprised of solar modules, inverters, access roads, and support electrical equipment. The proposed work will also include an onsite substation, overhead subtransmission and fiber-optic communication lines, underground facilities, and a control equipment enclosure/operations and maintenance (O&M) building that will include space for several uses, including control equipment housing, shop space, and spare part storage, with future uses to potentially include a worker break area and restroom.

3.1 Site Description

The Tulare Solar Center (the Project) will be located on historically disturbed agricultural lands in an unincorporated area of Tulare County, California. The project site is located along Highway 65, approximately 3.5 miles north of Highway 155 (in Kern County, and also known as

Garces Highway) or three miles northeast of Richgrove. Porterville Highway (State Route 65) bisects the Project Site in the north to south direction. The site comprises seven parcels, APNs 339-100-07, 339-110-006, 339-110-10, 339-110-16, 339-140-01, 339-140-08, and 339-140-010, which are all zoned Exclusive Agricultural (AE-40) and are designated Rural Valley Lands under the Tulare County General Plan. The project is consistent with Section 16 of Ordinance 352, as amended, allowing solar PV electric generating facilities within agricultural zoned lands, subject to a Special Use Permit and Developer Agreement.

The Project site consists of undeveloped land that is zoned for agriculture, and is primarily designated as Farmland of Local Importance by the California Farmland Mapping and Monitoring Program (FMMP), with the exception of one 20-acre parcel which has a Lands of Statewide Importance designation. All Project lands are contracted under the Williamson Act, and an initial review of site characteristics suggests a non-prime designation is appropriate for all parcels.

The site topography ranges from flat to gently sloped, and although APN 339-140-01 contains site improvements, including a farm house, a shop, a storage building, and related servicing utilities, the Project will not impact these improved areas. Rural unpaved roads run adjacent to southern, western and eastern portions of the Project Site. A paved highway (Porterville Highway or State Route 65) bisects the site at the Site's east-west mid-point, a graveled county road (Avenue 24) runs adjacent to the northern portion, and an unpaved road (Avenue 12) runs adjacent to the majority of the site's southern boundary. The site is bordered by undeveloped lands and agricultural fields.

3.2 Project Components

Construction of the Project generally requires a focus in three major areas. The areas of focus include: (1) the solar field with associated equipment, including solar PV panels/modules, racking systems (which may or may not include tracking devices), inverters, intermediate voltage transformers, access roads, and underground, above-ground, or overhead electrical systems to collect and consolidate power from across the project, (2) a substation that receives the solar field's electrical production and increases the voltage to match the voltage of the adjacent utility grid via a generator step-up transformer, and (3) any other electrical interconnection components necessary for the Project's production to reach the utility grid, including disconnect equipment, communications lines (e.g. fiber optics) and a subtransmission tap line.

The Project perimeter will be secured by an 8-foot-high, chain-link perimeter fence, potentially topped with barbed wire for added security. Access to the Project will be gained through several normally locked gates. If the site location is determined to be in sensitive habitat area, the perimeter fencing will be designed and installed for species accommodation as has been required of other solar PV projects in similar settings in the County.

3.3 Photovoltaic Modules and Solar Array Installation and Assembly

Manufacture of the PV modules (or panels) will be completed offsite at the original equipment manufacturer's (OEM's) location, and transported to the Project site. Although selection of the module OEM has not been finalized, the general characteristics of the PV modules are that they will be covered with dark, high-light-absorbing, low-reflective glass, and will be mounted on a corrosion-resistant metal racking system.

The structural support system (the racking system) for the PV module arrays will consist of corrosion-resistant metal supports, most likely galvanized steel, and will be anchored utilizing prudent engineering principles. One system under consideration includes a design where support posts are driven into the soil using a hydraulic/vibratory technique. This racking system utilizes support posts, which depending upon soil characteristics, are typically spaced 10 feet apart, approximately 13 feet in overall length, and driven to a depth resulting in approximately four (4) feet of the post remaining above grade. Support post spacing and lengths are determined as a result of geotechnical design considerations. Although other systems are under consideration, including a skid-mounted design utilizing screw-in anchors, or ballasts, it is expected that the vibra-driven posts would have the greatest degree of construction and reclamation impacts.

Generally, and continuing from the vibra-driven post example above, once the posts have been installed, horizontal support cross-members will be placed and secured. Then a galvanized metal (or aluminum) racking system will be assembled, and will allow the PV modules to be mounted on the overall support assembly. In the case of a skid-mounted design, greater degrees of assembly are anticipated at a central location, e.g. at the edge of the solar field, with subsequent relocation via a forklift of other machine. Depending upon final equipment design selections, the module support system may also include electro-mechanical drive systems for tracking of the sun's direct rays across the horizon. Addition of such a tracking system will not create significant impacts beyond the process described above.

If final Project design specifies use of a fixed module system, the arrays would be generally oriented along an east-west axis with the modules facing generally to the south. Optimal array orientation could utilize an approximate 25º clockwise clocking, such that the modules face 25º to the west of due south, i.e. an approximate azimuth of 205º. The module configuration would measure approximately seven feet in width. The modules would be tilted at an approximate 20- to 40-degree angle, or as otherwise determined necessary during final project design, to optimize their production. Alternatively, in the case where a single-axis tracking system is selected, the arrays would be oriented along a north-south axis, with the array angle automatically controlled to best track the sun's path. All other characteristics for the arrays would remain equivalent to the description above, except that the module tilt would likely be flat, or close to 0 degrees.

In either a fixed or single-axis tracking configuration, preliminary design indicates each row of modules to be approximately 300 feet in length (east/west for a fixed system, or north/south for a single–axis system). Final row lengths and spacing between each row (estimated at approximately 10 to 22 feet) will be determined upon completion of final equipment selection and design. The estimated maximum height of the module system measured from ground surface would be approximately 12 to 15 feet.

3.4 Module Interconnections, Inverters, Transformers and Substations

Once physically attached to the module/panel racking system, the modules would be electrically connected into strings with those strings electrically connected to each other, via code-compliant methods, either overhead, or above or below ground. The arrays' electrical cables will converge on inverter locations and will be arranged into power blocks. The cables from the modules (or panels) convey direct current (DC) electricity to the inverters, which in turn convert the DC electricity to alternating current (AC) electricity. Any underground cables will be installed

utilizing ordinary construction techniques, for example, a rubber-tired backhoe excavator or trencher. All electrical facilities and apparatuses will be installed in compliance with all pertinent codes.

The inverters (electrical devices to convert electricity from direct current to alternating current) and associated medium-voltage transformers would be placed on concrete foundations or pre-manufactured base-skids, and strategically located throughout the solar generation field. The Project will be designed and laid out in standard sized array blocks, e.g. 1-MW. Each of these blocks will include inverters and intermediate step-up transformer(s). The inverter/transformer equipment areas vary in size for each array block, but typical dimensions are approximately 40 feet by 25 feet. The size of these areas will ultimately be determined by final equipment selection.

Depending on final design, utility requirements, and the Project's ultimate build-out size, multiple substations could be required. The Project substation(s) will accept medium-voltage AC electricity from the intermediate transformers, and increase the voltage to a level necessary to match the voltage on the utility-owned grid. Construction of the substation(s) will be compliant with (a) all building code requirements, (b) the interconnecting utility's standards and requirements, and (c) prudent utility practice. Structures and equipment necessary for a substation include, but are not limited to:

- Various concrete footings and foundations
- A generator step-up transformer
- Isolation switches
- Metering transformers
- Structural steel
- Substation control enclosure
- Perimeter fencing (8-foot-high mesh topped by 3 to 6 strands of barbed wire)

Each project substation is expected to measure approximately 80 feet by 110 feet (ultimately determined by SCE). The substation(s) will be located on the Project site. The preliminary design anticipates placement of the initial substation along the northern site boundary, i.e. adjacent to Avenue 24. Alternate/secondary substation locations may be constructed within the Project's footprint. Each substation would require one generator step-up transformer which would increase the voltage from mid-level voltage to high-voltage, e.g. 12 kV or 34.5 kV to 66 kV. The transformer(s) will be oil-filled with forced air cooling.

3.5 Electrical Interconnection (SCE Interconnect)

The Project would interconnect with an existing Southern California Edison (SCE) subtransmission line which runs adjacent to the project site's northern boundary along Avenue 24. The line also passes through the eastern portion of the project site in a north-south orientation along Road 240. The generation tie-line (gen-tie) connecting the generation facility to the Project's substation, and the tap line connecting the Project's substation to the subtransmission line will be located on the project site, or on right-of-ways across adjacent property. The tap line is expected to be approximately 200 to 2,800 feet in length, but could be as long as 2.25 miles as determined by final engineering design. An encroachment permit may be required for the tap line

to reach the Point of Interconnection (POI), and will be obtained as necessary upon final design approval by SCE. It is anticipated that approximately six to eight new utility poles will be needed for the connection of overhead electrical wires from the substation to the existing subtransmission line, but in the extreme case as many as forty new poles could be needed.

In addition, SCE's interconnection study results for the Project indicate that a subtransmission line upgrade of SCE's Vestal-Kern River 3 66-kV transmission line will require approximately 2.5 miles of conductor and insulator replacement, including approximately 24 new wooden poles. Activities for conductor and insulator replacement would occur within an approximate 100-foot-wide corridor (30 meters) along the route. At each turn in the route, SCE will require 100-foot by 300-foot conductor pull sites in line with each route segment. In addition, these activities will require a one-acre construction laydown area, to be located at an existing SCE facility or at a location to be determined by SCE's contractor. As well, the installation of two diverse fiber optic cables, utilizing a combination of new and existing overhead and underground routes, will be necessary for system operations and protection. The routes are each approximately 2.5 miles in length. Activities for fiber installation would occur within an approximate 30-foot-wide corridor along the routes. At each turn in the route, SCE will require 50-foot by 100-foot fiber optic pull sites in line with each route segment. In addition, these activities will require an 8,000-square-foot construction laydown area, to be located at an existing SCE facility or at a location to be determined by SCE's contractor. All potential gen-tie, tap line, subtransmission upgrade, and fiber optic cable routes are located within the Project Area and will be addressed in this report.

3.6 Telecommunication/Fiber-Optic Line

The Project will be designed to employ a Supervisory Control and Data Acquisition (SCADA) system. The SCADA will allow remote monitoring of the Project's operation, as well as remote operations of its critical control components. Additionally, protection of the 66-kV line requires diverse communications to the relay protection equipment. Access to the Project's SCADA and line protection equipment will be accomplished with either wireless or hard-wired connections between the project site, the Project's remote monitoring and operations center, and the existing SCE Vestal Substation via the new fiber optic cable construction. In addition to SCE-owned communication facilities, other communication services will be procured from locally available commercial service providers, e.g. the Local Exchange Carrier.

3.7 Site Access and Roads

Access to the site would be via either Avenues 12 or 24 that connect to Highway 65. Inside the site, pervious roadways would provide access to the PV modules and the substation. Points of ingress/egress will maintain a minimum of a 20-foot driveway length from the edge of the adjacent road, with a width of 20 feet. The on-site road system would utilize permeable surfaces with widths and right-of-ways of 15 and 20 feet respectively. Depending on subsurface soil types, either varying depths of granular aggregate or another engineered stabilization solution would be used. The roads would be designed and installed according to geotechnical engineering recommendations. It is anticipated that any road gravel/aggregate would typically be two to four inches deep. Roads would be graded and compacted pursuant to typical construction practices necessary for service roads and to minimize the amount of gravel import and placement. Perimeter roads at least 20 feet wide and surfaced with gravel would be constructed around the facility. This perimeter road would provide a fire buffer in accordance with the requirements of

the Tulare County Fire Department, would accommodate Project O&M activities, and would also facilitate onsite circulation for emergency vehicles. O&M roads would be constructed to accommodate passenger vehicles consistent with a light-duty utility vehicle or pickup truck. Additional internal access roads/pathways (for periodic module washing and system maintenance) will also exist and would be unsurfaced dirt roads, most likely planted with ground cover plant material, with widths determined during final engineering. A minimum 50-foot setback is proposed from the property line to all solar modules and equipment where needed to ensure land use compatibility with adjacent land uses.

4.0 PROJECT LOCATION

The Project is located approximately three miles northeast of the small agricultural community of Richgrove in Tulare County, California (Fig. 1). The Project encompasses approximately 1,064 acres of agricultural lands, along Highway 65 and approximately 78 acres along existing SCE Vestal-Kern River No. 3 66kV transmission line, which mostly follows existing County roads. Specifically, the Project is located in Sections 17, 22, and 28, the S ½ of Section 21, the SW ¼ of Section 23, and the S ¼ of Section 16, Township 24 South, Range 27 East, Mount Diablo Base Meridian (MDBM), as depicted on the Richgrove, CA (1973) 7.5-minute series topographic quadrangle (Fig. 2).

5.0 ENVIRONMENTAL BACKGROUND

The study area is located on a flat plain in the southeast portion of southern San Joaquin Valley a few miles west of the foothills of the Sierra Nevada Mountains, and approximately 30 miles east of the Tulare Lake Basin. The topography is characteristic of a valley floor with flat, expansive land intersected by intermittent drainages. Elevation of the project area is between 540 and 670 ft.

The climate is Mediterranean, characterized by semiarid winters and hot, dry summers. Annual precipitation rarely exceeds seven inches, with roughly 70% of that precipitation falling between December and April (Sutton 1997:4). A Tule fog; a dense fog which forms as a result of moist air being trapped in the valley by high pressure systems, is common in the winter and frequently lasts for several weeks (Felton 1965:103).

Prior to the emergence of modern agricultural practices in the region, the San Joaquin Valley was a landscape dominated by networks of interconnecting watercourses, lakes, and sloughs (e.g. Sutton 1997:3). Until the late nineteenth century, the valley was home to a variety of grassland and freshwater communities typical of a more mesic environment (Twisselmann 1967). Tulare Lake, part of the larger Tulare Lake Basin, was a large freshwater lake formed by the consolidation of alluvial fan dams generated by the Kings River to the east and Los Gatos Creek to the west (Atwater et al. 1986:97; see also Fenenga 1994:108). At its maximum, the lake covered some 760 square miles and boasted a diverse biotic community and a large population of various Yokut tribes (Preston 1981; Fenenga 1994). Many of the plants that make up these biotic communities were important to the prehistoric inhabitants of the region, including grassnut root, grass seed, clover, mustard greens, and salt grass as well as fruits such as wild grapes, blackberries and manzanita berries (Latta 1976; Powers 1976; Osborne 1992:57).

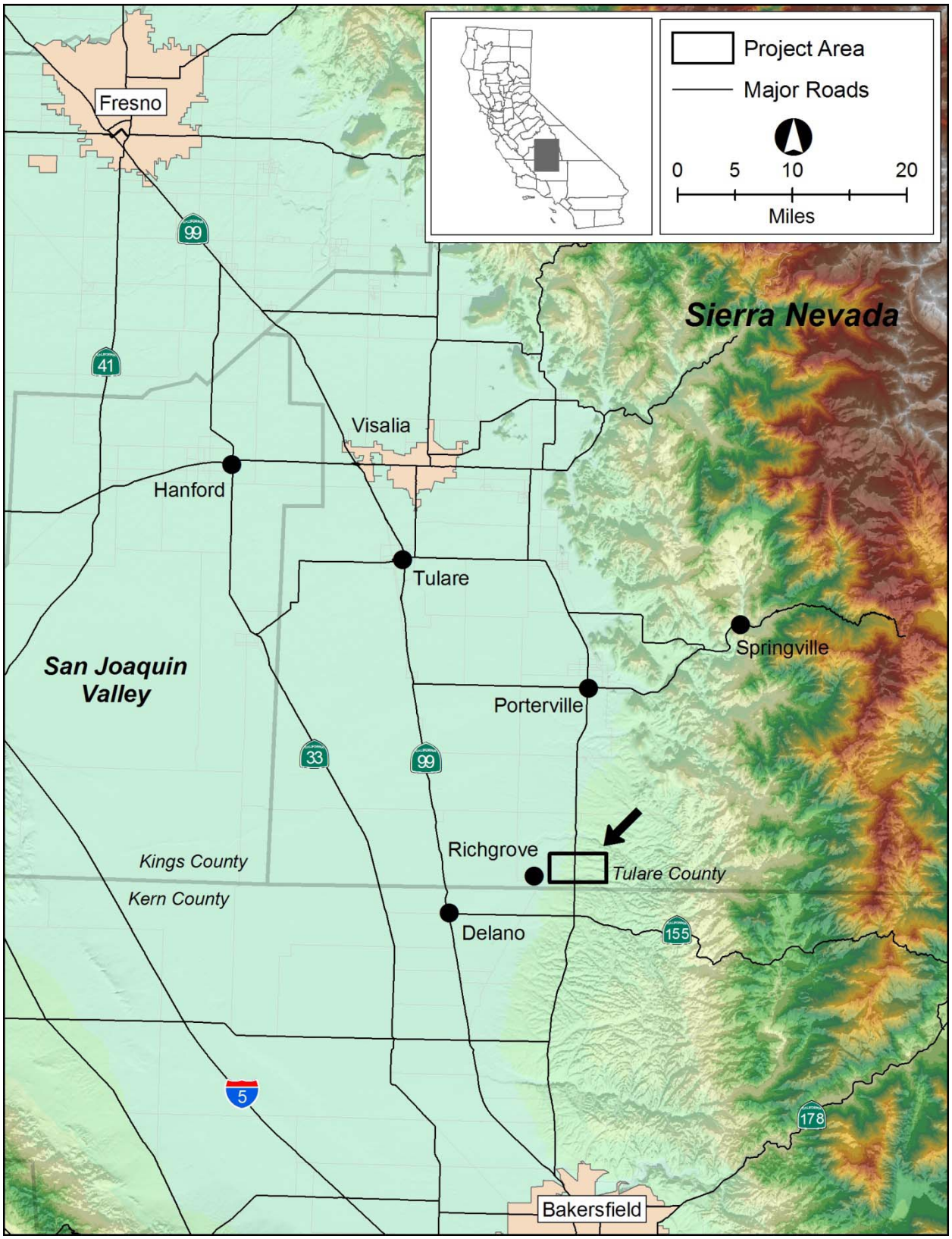

Figure 1. Project location map.

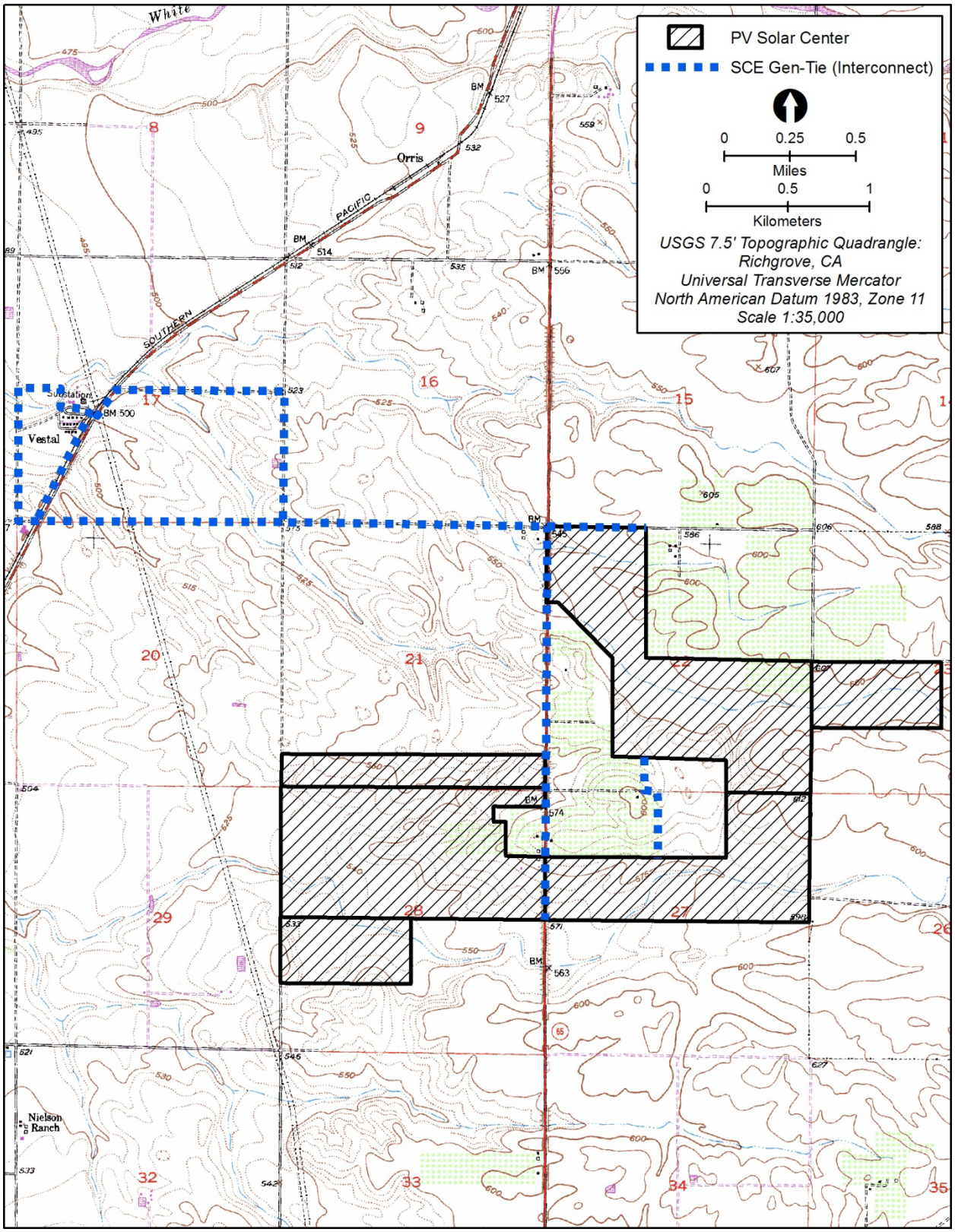

Figure 2. Location of the proposed Tulare Solar Center Project depicted on the Richgrove, CA (1973) USGS 7.5 minute series topographic quadrangle.

Tule was abundant and used for food and manufacturing material by native groups in the area (Osborne 1992:57). Many of these resources still exist, but their distribution and abundance have changed and for the most part diminished in the past century.

An extensive variety of animals was also represented in the valley, although many species are either extinct locally, or have experienced a drastic decline in population subsequent to Euro-American contact. Currently extant mammal species associated with the San Joaquin Valley faunal community include among others: coyotes, foxes, badgers, California jackrabbits, cottontail rabbits, ground squirrels, wood rats, pocket gophers, and mice (Osborne 1992:52). A variety of birds and waterfowl also reside in the valley, albeit in reduced numbers, including teals, mallards, wood ducks, Canadian geese, American coots, grebes, hawks, and a variety of passerine (perching) birds (Cogswell 1977). Fish species included Sacramento blackfish, Sacramento sucker, hitch, trout, perch, chub, and salmon among many others (Moyle 1976). Invertebrates were also abundant in the valley including freshwater mussels and clams, insects (e.g. grasshoppers, caterpillars, bees), reptiles (snakes and lizards), and amphibians such as frogs and toads. Fossil remains of mammoth, giant ground sloth, large and small horses, camel, dire wolf, Pleistocene lion and Bison are known in the region (Fenenga 1991:13).

6.0 CULTURAL BACKGROUND

It is believed that Native American groups have occupied the lake country of the San Joaquin Valley for at least the last 12,000 years. Although few sites of that age have been identified thus far, the most notable of these is the Witt site on the western shore of Tulare Lake (Fenenga 1993). Many of the earliest sites have been significantly damaged by agricultural practices in the past century (Sutton, personal communication 2006). Below is a general characterization of the Holocene prehistory of the San Joaquin Valley, utilizing the taxonomic system first proposed by Beardsley (1954a, 1954b) and detailed by Moratto (1984:181-183).

Archaeological evidence from the Early Horizon (8,000 to 4,000 B.P.) suggests that people were generally nomadic with their subsistence being based on large game hunting and fishing. Common artifacts found at sites from this period include hand-molded baked clay net weights, *Olivella* and *Haliotis* shell beads and heavy stemmed projectile points.

The Middle Horizon (4,000 to 1,500 B.P.) is characterized by a more diversified subsistence, with some evidence of an increasing emphasis on seed processing, along with hunting, fowling, and fishing. Artifacts from this period include *Haliotis* shell ornaments in varied geometric shapes, *Olivella* and *Haliotis* beads, distinctive spindle-shaped charmstones, cobble mortars, chisel-ended pestles, and large, heavy projectile points. Bone tools were extensively utilized for tools, such as for awls, fish spear tips, saws, and pressure flakers (used in the manufacture of flaked-stone implements such as projectile points).

In the Later Horizon (1,500 B.P. to Historic Contact), evidence suggests that subsidence strategies were increasingly focused on the processing of plant foods, with less emphasis on hunting, fowling, and fishing. Artifacts include *Olivella* beads, *Haliotis* ornaments, stone beads and cylinders, clamshell disk beads, tubular smoking pipes of stone, arrow-shaft straighteners, small side-notched projectile points, flat-bottomed mortars, and carefully crafted cylindrical pestles.

6.1 Ethnography

The project area is located in the southern San Joaquin Valley. According to ethnographic data the project area is located in the core territorial boundary of the Southern Valley Yokuts. The Yokuts have been the subject of considerable study by numerous researchers, including Kroeber (1925), Gifford and Schneck (1926, 1929), Gayton (1948), Powers (1976), Latta (1977), and Wallace (1978). The following discussion draws primarily from these sources.

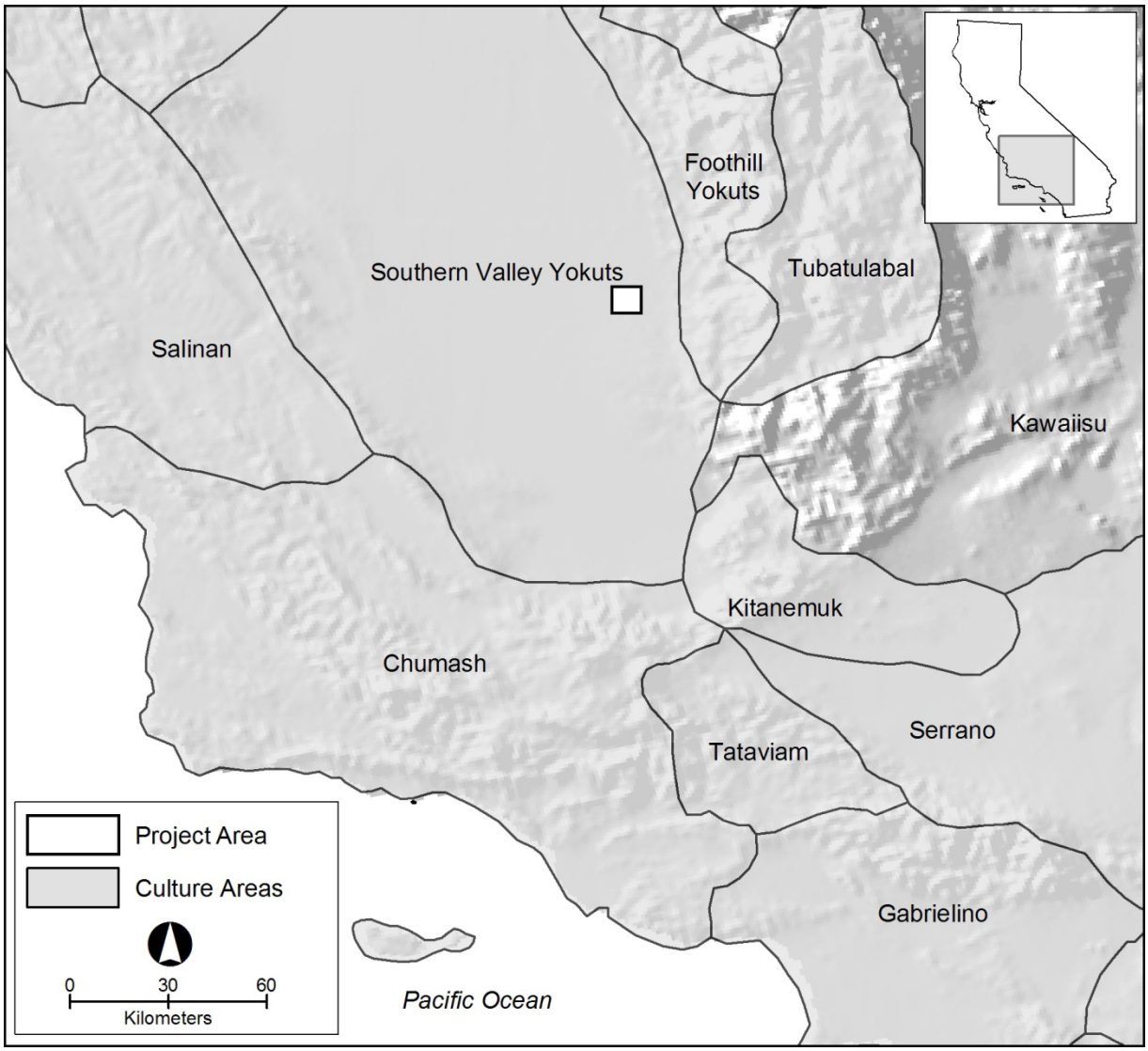

Figure 3. Map of Southern Valley Yokuts territory and neighboring groups (adapted from Kroeber 1925).

The Yokuts have been separated into three geographical divisions: Northern Valley, Southern Valley and Foothill. There were at least 40 Yokuts tribes. Each tribe has a distinctive name, dialect, and territory. Their tribes could be organized into single, large village settlements or consist of smaller settlements grouped together. Each group was self-governed and some groups numbered as many as 350 people. Every village had a captain and a central chief (these titles were hereditary). The captain reported to the chief.

The easy availability of resources, such as fish, waterfowl, shellfish, roots, and seeds, enabled the Yokuts to occupy permanent villages most of the year. They practiced a subsistence strategy that emphasized fishing, fowling, and the collection of shellfish, roots, and seeds. Fish provided their primary food resource and were generally caught by netting. Agriculture seems not to have been practiced by the Yokuts, possibly due to the abundance of game animals and plant resources (Beals 1974:45).

6.2 History

In 1772, European contact with the Southern Valley Yokuts was first recorded when a detachment of Spanish soldiers under the command of Pedro Fages ventured through the Tejon Pass into the San Joaquin Valley. No further contact is indicated until Father Garces, a Franciscan friar, arrived in 1776. With the annexation of California by the United States, the San Joaquin Valley was overrun with settlers, and native lands passed into Euro American hands.

The Spanish presence in the region played a part in the dispersal of native populations from the foothills and depopulation of entire villages (Cook 1955:55-56). Indigenous population in the region was severely reduced by European diseases introduced by the Spanish explorers. This process of disposition proved relatively easy as the settlers, sometimes forcibly, removed Indian families and communities (Wallace 1978:469). The few surviving Southern Valley Yokuts were sent to the Tejon reservation established at the base of the Tehachapi Mountains, or to the Fresno reservation near Madera. These reservations failed to prosper, and in 1859, the Native Americans who remained on them were moved to the Tule River reservation.

Prior to the Gold Rush, the study area was devoted to grazing and hunting, as immense herds of cattle and some horses roamed the valley. The California gold rush created a deluge of miners and prospectors into the region. Wagon trails and gold seekers passed through the region, but some found the land rich and remained to establish farms. The first store, in what is now Porterville, was setup in 1856 to sell goods to miners and the Indians who lived along the rivers. In 1860, Royal Porter Putnam, bought 40 acres of land and subdivided them into town lots. By 1864, Putnam had built a two-story building that housed a store, hotel, and bar (Winckel 2002:4).

As with most valley towns, the great flood of 1861-62 had a tremendous impact on the early history of Porterville. Prior to the flood, the Tule River followed the course of the current Porter Slough up to the Third Street, where it turned north for about a mile, then west with Henderson Avenue forming its northern bank (Winckel 2002:4). As the Tule River changed its course many of the inhabitants of the area found themselves far from a regular flow of water. This situation was further compounded after a severe drought conditions in the summer of 1862. As a result, small companies were organized to dig canals and ditches with diversions on the Tule River. In 1864, Putnam John Murray and rancher named John Hockett organized a ditch company to divert water from the river to Porterville and then on to Hockett's Ranch for irrigation. Water from the irrigation ditch provided the town of Porterville with its only water supply. One of the ditches used for this purpose was the Pioneer Ditch, which was constructed in 1857 using Yokuts labor.

By 1872, Porterville had several stores, a hotel and saloon and a blacksmith shop (Small 1926:461). In 1888, the Southern Pacific Railroad had constructed rail service to a small station

in the growing community. For farmers, the railroad meant that their crops could now be shipped to both northern and southern markets and agricultural communities like Richgrove and Ducor thrived during this time. Orange groves begun to appear in the area and by 1892 numerous parcels contained orchards were planted with citrus and grapes.

Following years of experimentation with the distribution and generation of alternating current, hydroelectric power was used to illuminate most of the southern California. In 1908 the Tule River Hydro Project was started by the Globe Power Company along the Tule River. The Globe Power Co. was subsequently acquired by Mt. Whitney Power and in 1913 Henry Huntington's Pacific Light & Power (PL&P) took over Mt. Whitney Power and merged with SCE in 1917. The early 12 kV distribution voltage most likely served early agricultural needs (Taylor, personal communication 2008). In subsequent years, construction of electric distribution lines helped bring power to agricultural communities in the southern San Joaquin Valley.

7.0 METHODOLOGY

Archaeological investigations reported herein consisted of a records search conducted at the Southern San Joaquin Valley Archaeological Information Center (SSJVAIC) in Bakersfield, as well as an intensive pedestrian survey of the entire Project Area. Additionally, a sacred file search letter was submitted to the NAHC in Sacramento, as well as a request for a paleontological records search for the entire Project Area. Brief summaries of each request and their results are provided below (see 7.2 and 7.3)

7.1 Research Design

A research design is an explicit statement of the theoretical and methodological approaches to be used in an archaeological study (Office of Historic Preservation (OHP) 1989:5). For inventory studies, where the data are limited to archaeological and historical resources visible on the ground surface, supplemented by archival research and literature reviews, the goal of the research design is to ensure the adequacy of the identification effort and to examine hypotheses concerning settlement patterns and resource exploitation that can be tested using inventory data (OHP 1991:7).

In order to facilitate archaeological study, a specific body of theory is used to provide the necessary framework and guide for that research. The Project Area offers a number of unique opportunities for investigating human adaptations in a changing environment. Several questions can be asked regarding the past lifeways of the prehistoric Native American occupants of the area and the changes in land use patterns in the historic period:

1. Do artifact assemblages found at the identified sites reflect a foraging or collecting society?

2. Are there any spatial and temporal patterns between identified sites and known sites within the region?

3. What types of archeological site are represented within the Project Area?

4. How old are the buildings/structures within the Project Area and do they reflect national revival style or styles?

5. When was the first electric distribution line installed and what impact did it have on the economic growth of the community?

6. What are the historic networks of exchange and commodity distribution?

This archaeological study was conducted within the above framework comprised of intensive surface survey, archival records search and literature review. While study of this size does not warrant an extensive theoretical background, the above research questions guided this archaeological investigation. This approach was used in the documentation and interpretation of sites identified during this investigation.

7.2 Native American Notification

California Public Resources Code Sections 5097.94(a) and 5097.96 authorize the Native American Heritage Commission (NAHC) in Sacramento to hold records of Native American sacred sites and burial sites. The NAHC also holds records of individuals that have particular expertise and knowledge in Native American resources. On July 30, 2012, AMEC on behalf of TSC has contacted the NAHC and requested a sacred file search for the entire Project Area. The NAHC's record search of the sacred land file did not indicate the presence of cultural resources within the current Project Area. The NAHC provided a list of nine Native American individuals/organizations to contact, which is contained in Appendix A.

7.3 Paleontological Sensitivity Records Search

Paleontological resources are the fossilized remains or traces of multi-cellular invertebrate and vertebrate animals and multi-cellular plants, including their imprints. Fossil remains such as bones, teeth, shells, and leaves are found in the geologic deposits (rock formations) where they were originally buried. Paleontological resources include not only the actual fossil remains, but also the collecting localities, and the geologic formations containing those localities.

On July 30, 2012, AMEC on behalf of SCE and TSC, contacted the Natural History Museum (NHM) in Los Angeles and requested a review of known paleontological collections and resources within the entire Project Area. The NHM search did not identify any significant paleontological deposits within the current Project Area or in the immediate vicinity of the Project Area that could be impacted by the proposed project. Copies of correspondence related to paleontological records search are contained in Appendix B.

According to geologic maps, the entire Project Area, lies within terrestrial Plio-Pleistocene deposits typically referred to as the Kern River Formation. Several known vertebrate fossil localities from the Kern River Formation are all located south-southeast of the current Project Area and northeast of Bakersfield. Portions of the Project Area, particularly in the southern portion, appear to have surface deposits of younger Quaternary Alluvium, primarily associated with the drainages that flow through the Project Area. These deposits typically do not contain significant vertebrate fossils, at least in the upper most layers; however, two vertebrate fossils localities from the Quaternary Alluvial deposits have been identified east of the northern part of the Project Area between Fountain Springs and White River. Both of those localities produced specimens of fossil mammoth, *Mammuthus.* At present there are no known reported fossil discoveries or locations that have been reported within the proposed Project Area (see Appendix B).

7.4 Records Search

A records search of the entire Project Area, including a ½-mile radius area immediately surrounding the Project Area, was conducted at the SSJVAIC on July 15, 2012. The objective of this archival research was to identify historical and archaeological resources on or within a ½ mile radius of the Project Area. As part of the archival research at the SSJVAIC, the following sources were consulted: the *California Archaeological Inventory Records, NRHP*, *California Historic Landmark Registry, California Points of Historical Interest, Inventory of Historic Structures,* and *Historical Landmarks for Tulare County*. Provided below are the results of the records search summarized by project's components.

7.4.1 Photovoltaic (PV) Areas

The results of the records search indicated that no cultural resources were previously documented within the 1,064 acres Project Area designated for the construction of the PV panels; however, one historic resource was previously documented within a ½-mile radius of the Project Area (Table 1). Additionally, no cultural resource studies were previously conducted within the PV Project Area; however, two previous cultural resources studies (Binning 2001; Sutton and Lewis-Pruett 1989) were conducted directly adjacent to the Project Area, and one negative cultural resources study (Schmidt 2009) was conducted within a ½-mile radius of the Project Area (Table 2).

TABLE 1
KNOWN CULTURAL RESOURCES PREVIOUSLY DOCUMENTED WITHIN A ½-MILE RADIUS OF THE PROJECT AREA (PV AREAS)

Quad	Trinomial	Primary No.	Component	Description
Richgrove	CA-TUL-2396H	54-003895	Historic	Refuse deposit

TABLE 2
CULTURAL RESOURCE PROJECTS PREVIOUSLY CONDUCTED WITHIN A ½-MILE RADIUS OF THE PROJECT AREA (PV AREAS)

Author	Year	Level of Investigation	Results	Ref No.
Binning, J.	2001	Survey	Negative	TU-01047
Schmidt, J.	2009	Survey	Negative	TU-01513
Sutton, M., and C. Lewis-Pruett	1989	Survey	Positive	TU-00101

7.4.2 Gen-Tie/SCE Interconnect

A records search of the gen-tie (SCE Interconnect) areas along existing SCE Vestal-Kern River No. 3 kV transmission line revealed that no cultural resources were previously documented within the alignment of the transmission line and one previously documented resource was previously documented within a ½-mile radius of the Project Area (Table 3). Additionally, two negative surveys (Hatoff et al. 1995; Schmidt 2009) and one positive survey (Sutton and Lewis-Pruett 1989) were conducted directly within the Project Area and within the alignment of the transmission line, and four negative cultural resource surveys (Binning 2001; Henrikson 2007,

2008; Orfilla 2010) were previously conducted within a ½-mile radius of the Project Area (Table 4). A summary of positive survey within the Project Area is provided below.

TABLE 3
KNOWN CULTURAL RESOURCES PREVIOUSLY DOCUMENTED WITHIN A ½-MILE RADIUS OF THE PROJECT AREA (GEN-TIE/SCE INTERCONNECT)

Quad	Trinomial	Primary No.	Component	Description
Richgrove	CA-TUL-2396H	54-003895	Historic	Refuse deposit

Sutton and Lewis-Pruett (1989) conducted an archaeological survey along the SCE's Kern River No. 3 hydroelectric project and its support facilities as part of the re-licensing project of existing SCE facilities. The survey was conducted between the Vestal substation to the west and the Kern River No. 3 powerhouse to the east and resulted in the identification and documentation of 15 resources (12 new and three updated) within the SCE right-of-way. However, all of the resources documented by Sutton and Lewis-Pruett (1989) are located well outside the current Project Area and will not be impacted by the proposed project.

TABLE 4
CULTURAL RESOURCE PROJECTS PREVIOUSLY CONDUCTED WITHIN A ½-MILE RADIUS OF THE PROJECT AREA (GEN-TIE/SCE INTERCONNECT)

Author	Year	Level of Investigation	Results	Ref No.
Binning, J.	2001	Survey	Negative	TU-01047
Hatoff, B., B. Voss, S. Waechter, and S. Weeks	1995*	Survey	Negative	TU-00102
Henrikson, S.	2007	Survey	Negative	TU-01145
Henrikson, S.	2008	Survey	Negative	TU-01146
Orfilla, B.	2010	Survey	Negative	TU-01511
Schmidt, J.	2009*	Survey	Negative	TU-01513
Sutton, M., and C. Lewis-Pruett	1989*	Survey	Positive	TU-00101

**study conducted within the current Project Area*

7.5 Field Survey

AMEC archaeologists Hubert Switalski and Andrea Bardsley conducted a pedestrian survey of the Project Area between July 16 and August 6, 2012. The survey was conducted with parallel transects spaced approximately 15 to 20 meters apart to ensure total coverage of the entire Project Area. The survey was commenced in the southeastern portion of the Project Area, just north of Avenue 12 and continued in east-west direction. Once the southernmost parcel was completed, the survey commenced on the west side of Highway 65 and continued until all parcels west of Highway 65 were completed. Lastly, the two parcels located south of Avenue 24 and east and west of Road 240 were surveyed in north-south and east-west transects, with an average surveyed acreage of approximately 150 acres per day. Once the PV areas were inventoried for cultural resources, the SCE Interconnect portion along the Vestal-Kern River No. 3 transmission line was surveyed for cultural resources. The survey commenced at the intersection of Road 224 and Avenue 24 and proceeded within the transmission line alignment and within the 30-meter buffer on each side of the transmission line.

The survey was conducted in areas that were predominantly used for and have been disturbed by agricultural activities over the last 50 years. Approximately 90% of the Project Area was located in fields/areas that have been used for wheat cultivation and were harvested two weeks prior to the commencement of fieldwork (Fig. 4). Of those, approximately 45% of land was harvested and freshly plowed less than two weeks before the commencement of fieldwork (Fig. 5). The remaining 10% of the Project Area was located along existing roadways and within an existing SCE transmission line that was surrounded by agricultural fields, paved roadways, existing structures, citrus orchards and vineyards (Fig. 6). Approximately 20 acres of the Project Area, located within the area designated for PV construction just south of Avenue 24 and west of Road 240 was not surveyed due to an abandoned kiwi orchard with knee high dry grasses that completely obscured ground visibility (Fig. 7). Generally, ground visibility within the remaining areas was very good between 90 and 90% ground visibility, albeit in an already disturbed context. The topography was relatively flat with slope less than 5°; however, approximately 120 acres of land located between Road 240 and Highway 65 were slightly steeper than the remaining of the Project Area with slope between 10 and 15°.

Figure 4. Overview of the Project Area east of Highway 65, view east (AMEC IMG_0720).

Figure 5. Overview of the freshly plowed parcel west of Road 240, view south (AMEC IMG_0745).

The survey concentrated on the identification of cultural features and artifacts within the Project Area. Additionally, any constraints affecting the reliability of the survey, such as obscured surface visibility due to vegetations or the presence of modern development, were observed and noted. The extent of each survey area and transect was recorded with a Trimble Juno SB, hand-held GPS unit, with less than 3 meter horizontal accuracy, with the Universal Transverse Mercator (UTM), North American Datum of 1983 (NAD 83), Zone 11, meters, as the spatial reference. Photographs were taken with a Canon PowerShot A530 digital camera to document the current environment within the APE and its immediate surroundings. The extent of the survey coverage was drawn on the Richgrove, CA (1973) USGS 7.5-minute series topographic quadrangle (see Appendix C).

Figure 6. Overview of the Project Area along the Vestal-Kern River No. 3 transmission line, view west towards Vestal substation (AMEC IMG_0827).

Figure 7. Overview of the abandoned 20-acre kiwi orchard not surveyed due to obscured ground visibility, view north (AMEC IMG_0744).

8.0 SURVEY RESULTS

The survey of the current Project Area resulted in the identification of four new historic resources (Table 5). The new resources consisted of remains of a water tank structure (54-004831), portion of the Big Creek No. 3 transmission line (54-004832) one telegraph/telephone

line segment (54-004833), and an undocumented portion of the Southern Pacific Railroad between Famoso and Porterville (54-004834). No additional resources were observed during the course of the study.

New sites and previously documented sites were recorded and updated on California Department of Parks and Recreation Historical Resource Record forms (series DPR 523 1/95), including Primary and/or Archaeological Site Record forms appropriate for all such resources. Recordation adhered to the *Instructions for Recording Historical Resources* (OHP 1995).

8.1 NEW RESOURCES

The survey of the Project Area resulted in the identification and discovery of four new, undocumented resources. A brief summary of each resource is provided below.

TABLE 5
SUMMARY OF CULTURAL RESOURCS IDENTIFIED DURING THE CURRENT STUDY

Quad	Temp. No.	Trinomial	Primary No.	Component	Description	Project Component
Richgrove	TSC-1	-	54-004831	Historic	Water tank foundation	PV
Richgrove	TSC-2	CA-TUL-3011H	54-004832	Historic	Big Creek No. 3 T/L	Interconnect
Richgrove	TSC-3	CA-TUL-3012H	54-004833	Historic	Telephone line	Interconnect
Richgrove	TSC-4	CA-TUL-3013H	54-004834	Historic	Southern Pacific Railroad	Interconnect

8.1.1 54-004831 (Water Tank Foundation)

Resource 54-004831 is a small, historic period resource comprised of four large concrete footings with fragments of milled wood located on a top of a knoll overlooking Highway 65. The resource is relatively small and measures approximately 15 by 15 meters. Each footing is approximately 24 in. in base length and approximately 12 in. in height, suggesting that once they may have supported a large water tank or may have been part of an irrigation system. All four footings appear to be removed from their original location and as they are resting on top of broken concrete foundation. Several pieces of milled wood, of various lengths and thickness, were observed protruding from between the fragments of concrete (Fig. 8). No other artifacts or features were observed in the immediate vicinity of the resource.

8.1.2 54-004832/CA-TUL-3011H (Big Creek No. 3 Transmission Line)

Resource 54-004832 is a historic Big Creek No. 3 transmission line, which is part of the Big Creek Hydroelectric System constructed between 1913 and 1929. In 1917, the Big Creek Hydroelectric System was acquired by SCE when SCE merged with Pacific Light & Power. The first transmission line from Big Creek to Los Angeles was placed into service in 1913 at a pressure of 150,000 volts. By 1922, with new generation coming on line and more planned, the capacity of these original lines was inadequate. By 1922, the transition from 150kV to the new 220kV began, which entailed the installation of new transformers, bigger switches, and circuit breakers at all the Big Creek plants (Myers 1986). Along the entire length of the transmission lines from Big Creek to the Eagle Rock Substation near Pasadena, 3,401 steel lattice towers were

erected: 2,214 suspension towers and 1,187 dead-end towers. This 243-mile long transmission line at the time of its development was the largest hydroelectric system in the world.

Figure 8. Overview of 54-004831 with concrete footings in the foreground, view northwest with the Vestal-Kern River No. 3 transmission line in the background (AMEC IMG_0801).

A portion of the current project (SCE interconnect) intersects the Big Creek transmission line in two locations, approximately ¼-mile south and approximately 100 meters south of the Vestal Substation. At both locations, the Big Creek transmission line passes overhead the existing Vestal-Kern River No. 3 transmission line, with the nearest Big Creek tower approximately 120-150 meters away from the Project Area (Fig 9). No other features associated with the Big Creek Hydroelectric System were observed within the current Project Area.

Figure 9. Overview of the Big Creek No. 3 Transmission Line (54-004832), view south. Photo taken from Avenue 24 (AMEC IMG_0824).

8.1.3 54-004833/CA-TUL-3012H (Telephone/Telegraph Line)

Resource 54-004833 is a historic period telegraph/telephone line constructed in the early 1900s. The resource is located approximately 10 meters from the nearby (abandoned) Southern Pacific Railroad (54-004834) suggesting it was constructed in association with the railroad. The line follows the Southern Pacific Famoso to Porterville spur, on the east side of the railroad for

approximately 12 miles. Similar telephone line is visible along the Bakersfield-Famoso spur of the Southern Pacific Railroad between Famoso and Bakersfield on the west side of Highway 99. The resource is comprised of numerous wood pole structures approximately 20-25 ft. in height with a single wooden cross arm. Several ceramic insulators are attached to each cross arm, with overhead wires still strung between poles. None of the wood poles had any marking suggesting their actual height or the date of construction. However, given their close proximity to the railroad it is very likely that the line was constructed to facilitate communication between Southern Pacific Railroad facilities in the San Joaquin Valley (Fig. 10).

Figure 10. Overview of 54-004833, view southwest along the (abandoned) Southern Pacific Railroad (AMEC IMG_0843).

8.1.4 54-004834/CA-TUL-3013H (Abandoned) Southern Pacific Railroad – Famoso to Porterville Spur

Resource 54-004834 represents a historic spur of the Southern Pacific Railroad between Famoso to the south and Porterville to the north. The line was constructed around 1888 with the intention to ship local crops, mostly citrus, grapes, and others, to both northern and southern markets. This portion of the railroad connected the Southern Pacific railroad siding in Famoso and connected the local agricultural communities of Richgrove, Ducor, and others with the community of Porterville. A short segment of this railroad, just north of Porterville (Porterville-Visalia spur) was previously documented by Jones and Stokes in 2001 as 54-004019 and was noted to be still in use.

The current Project Area intersects this railroad at two locations and a small portion of the Project Area runs parallel to the railroad for approximately 0.6 miles, approximately 30 meters from the railroad. This section of the railroad appears to have been abandoned with the rails removed and only the slightly raised grade remains visible. The grade is approximately 10 ft. in width and approximately 2 ft. in height (Fig. 11). A nearby telegraph/telephone line (54-004833) runs parallel to the railroad on the east side of the railroad. This abandoned grade continues south for approximately 12 miles to Famoso. At the siding in Famoso this resource appears to be still in use. There are several wooden bridges as well as numerous structures (packing houses, warehouses) associated with the railroad further south and possibly north; however, they were not recorded as they are well outside of the current Project Area.

Figure 11. Overview of the (abandoned) Southern Pacific Railroad (54-004834) between Famoso and Porterville, view southwest (AMEC IMG_0837).

9.0 EVALUATIONS OF SIGNIFICANCE

While the primary goal of the intensive pedestrian survey was to identify and document cultural resources, tentative determination of the significance of identified resources can be provided here. These evaluations are only directed at the sites identified as historic or prehistoric resources within the Project Area and are based on the surface observations only. Since no excavation or subsurface testing was conducted as part of this study, the presence or absence of subsurface deposits cannot be fully determined. Still, some preliminary interpretations can be offered based on the data obtained during fieldwork and on the archival data collected.

Decisions regarding the treatment of the cultural resources located within the Project Area are subject to CEQA, which requires lead agencies to take into account the effects of their undertaking on significant historic properties. CEQA Guidelines (Section 15064.5) define a significant historical resource as a resource listed in, or determined eligible for listing in the California Register of Historical Resources (Pub. Res. Code Section 5024.1, Title 14 CCR, Section 4850 et seq.). A resource may be eligible for inclusion in the California Register of Historical Resources (CRHR) if it meets one or more of the following criteria:

A. It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.

B. It is associated with the lives of important historical figures.

C. It embodies the distinctive characteristics of a type, period, region, or method of construction, represents the work of an important creative individual, or possesses high artistic value.

D. It has yielded, or may be likely to yield, important prehistoric or historic information.

In addition to meeting one or more of these criteria, to be eligible for listing on the CRHR a resource also must retain integrity. Integrity is defined as the resource's ability to convey its significant qualities or its period of significance and is expressed through seven factors: location, design, setting, workmanship, materials, feeling, and association.

If an archaeological resource does not fall within the definition of an historical resource, but does meet the definition of a "unique archaeological resource" (Pub Res Code 21083.2 (g)) then the site must be treated in accordance with the special provisions for such resources. Archaeological resources will be considered unique if, without merely adding to the current body of knowledge, they: a) contain information needed to answer important scientific research questions and that there is a demonstrable public interest in that information; b) Have a special and particular quality such as being the oldest of its type or the best available example of its type; and c) is directly associated with a scientifically recognized important prehistoric or historic event or person.

Even without a formal determination of significance and nomination for listing in the CRHR, the lead agency can determine that a resource is potentially eligible for such listing, to aid in determining whether a significant impact would occur. The fact that a resource is not listed in the CRHR, or has not been determined eligible for such listing, and is not included in this archaeological survey report, does not preclude an agency from determining that a resource may be a historical resource for the purposes of CEQA.

A project that may cause substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment (Pub. Res. Code 15064.5(4)(b)(2)). The significance of an historical resource is materially impaired when a project:

a) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources; or

b) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an historical resource survey meeting the requirements of section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or

c) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by the lead agency.

9.1 54-004831

The newly documented resource (54-004831) is an abandoned water/irrigation tank with only the four concrete footings still remaining. Based on the current project description the resource will be destroyed by the construction and installation of the PV solar facility. However, given the lack of overall integrity and the fact that the recordation and documentation of the resource exhausts its research potential, the resource does not appear to be eligible for nomination to the CRHP neither under Criteria A, B, C, or D.

9.2 54-004832/CA-TUL-3011H

Resource 54-004832 represents part of the Big Creek No. 3 transmission line, which intersects the current Project Area at two different locations. Based on the current project description the proposed project would not replace or alter any portion of the Big Creek transmission line, which is part of the Big Creek Hydroelectric System. The generation and transmission facilities at Big Creek system dating between 1911 and 1929, the period of significance for the Big Creek Hydroelectric System, are eligible for listing in the CRHR and the NRHP per eligibility Criteria A, B, and C (Shoup et al. 1988). The historic transmission system has remained substantially intact along its entire 241-mile length, even though conductors and insulators on the line(s) may have been changed in the past century; however, this has not diminished the overall historical integrity of the system.

9.3 54-004833/CA-TUL-3012H

Resource 54-004833 represent a portion of the telegraph/telephone communication systems that was most likely installed to facilitate communication between Southern Pacific Railroad facilities along the Famoso to Porterville spur. Given that the resource is not unique, nor does it represent a unique and distinct architectural style, the resource does not appear eligible for nomination to the CRHR either under Criteria A, B, C, or D. Based on the current project description the proposed project would not alter nor replace any part of the existing resource; thus, the resource will not be adversely impacted by the proposed project.

9.4 54-004834/CA-TUL-3013H

Resource 54-004834 is an abandoned Southern Pacific Railroad spur, which at some point in time served the agricultural industry of the Southern San Joaquin Valley and connected local vineyards, citrus orchard, and wineries with local markets in the Bakersfield and Porterville area. As this abandoned resource is no longer in existence, it will not be significantly impacted by the proposed project. Furthermore, as the resource is no longer in existence it does not appear to be eligible for nomination to the CRHR.

10.0 RECOMMENDATIONS

As part of the current study, approximately 1,122 acres of land were inventoried to determine whether cultural resources will be adversely affected by the proposed project. The survey resulted in the identification and documentation of four new resources located within the current Project Area.

While the three historic resources (54-004831, 54-004833, and 54-004834) documented by AMEC personnel during the current study, failed to meet CRHR criteria (Table 6), recording their location, assemblages and their composition adds sufficient information to the regional database. This process aids scientific understanding of historic and/or prehistoric land use patterns, technology, subsistence, and other areas. Furthermore, the information included in site records for each resource is sufficient for mitigation purposes, and no further archaeological work is recommended at these locations. However, the Big Creek No. 3 transmission line (54-004832), which is part of the Big Creek Hydroelectric System is eligible to the CRHR and the

NRHP, thus it represents a significant historical resource. While the proposed project would not alter or change any portions of the transmission line, the resource would not be adversely affected by the construction of the proposed PV solar center. However, if the scope of the proposed project changes or additional work is required near the existing resource, additional archaeological study may be required to mitigate any impacts that would be caused by the new undertaking.

TABLE 6
MANAGEMENT RECOMMENDATIONS FOR RESOURCES WITHIN THE PROJECT AREA

Temp. No.	Trinomial	Primary No.	Description	Integrity	CRHP Eligibility	Recommendations
TSC-1	-	54-004831	Historic water tank foundation	Poor	Not Eligible	No Further Research
TSC-2	CA-TUL-3011H	54-004832	Historic Big Creek No. 3 TL	Good	Eligible[1]	No Further Research
TSC-3	CA-TUL-3012H	54-004833	Historic telephone line	Good	Not Eligible	No Further Research
TSC-4	CA-TUL-3013H	54-004834	Historic Southern Pacific Railroad	Poor	Not Eligible	No Further Research

[1]*contributing element of the Big Creek Hydroelectric System*

The methods and techniques used by AMEC are sufficient for the identification of cultural resources visible at the ground surface. However, there is always a possibility that buried archaeological deposits could be found during construction and earth disturbing activities. In the event that cultural resources are encountered during construction activities, all work must stop and a qualified archaeologist should be contacted immediately. Further, if human remains are encountered during construction, State Health and Safety Code Section 7050.5 requires that no further work shall continue at the location of the find until the County Coroner has made all the necessary findings as to the origin and distribution of such remains pursuant to Public Code Resources Code Section 5097.98.

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APPENDIX A – NATIVE AMERICAN NOTIFICATION

July 30, 2012

Native American Heritage Commission
915 Capitol Mall, RM 364
Sacramento, CA 95814
(916) 653-4082

Subject: Sacred Lands File and Native American Contacts List Request for Wellhead Electric Company, Inc. for the Tulare Interconnect Project in Tulare County, CA

Dear Sir or Madam,

On behalf of Wellhead Electric Company, Inc. (Wellhead), AMEC Environment and Infrastructure, Inc. (AMEC) would like to request a sacred lands file search and a list of appropriate Native American contacts for the above referenced project located in Tulare County, California. The project is located on private property adjacent to State Route 65 approximately 15 miles east of the City of Delano, California.

The proposed project entails the installation of a solar photovoltaic system which will encompass approximately 1,100 acres in the planned Tulare Solar Center. The photovoltaic system will be interconnected to and operated in conjunction with the Southern California Edison (SCE) electric grid per the requirements of the National Electric Code and SCE. The project will be completed in compliance with State and County requirements and to the satisfaction of the SCE archaeological and environmental review.

Enclosed for ease of reference are the completed Native American Heritage Commission Request Form containing additional project location information, and a map of the proposed project area on the Richgrove, CA (1973) USGS 7.5-minute Quadrangle map.

Please contact me if you have any questions or concerns regarding this proposed project. Thank you for your time and assistance.

Kind regards,

Hubert Switalski
Senior Archaeologist
104 W Anapamu Street, Suite 204A
Santa Barbara, CA 93101

Enclosures: 1) Sacred Lands File & Native American Contacts List Request Form
2) Figure - Richgrove, CA (1973) USGS 7.5-minute Quadrangle

Sacred Lands File & Native American Contacts List Request Form

NATIVE AMERICAN HERITAGE COMMISSION
915 Capitol Mall, RM 364
Sacramento, CA 95814
(916) 653-4082
(916) 657-5390 – Fax
nahc@pacbell.net

Information Below is Required for a Sacred Lands File Search

Project: Wellhead Tulare Interconnect Project

County: Tulare County

USGS Quadrangle Name: Richgrove, CA (1973)

Township: 24 South, Range: 27 East Section(s): 15, 16, 17, 21, 22, 23. 27, and 28

Company/Firm/Agency: AMEC Environment & Infrastructure, Inc.

Contact Person: Andrea Bardsley

Street Address: 104 W. Anapamu Street, Suite 204A

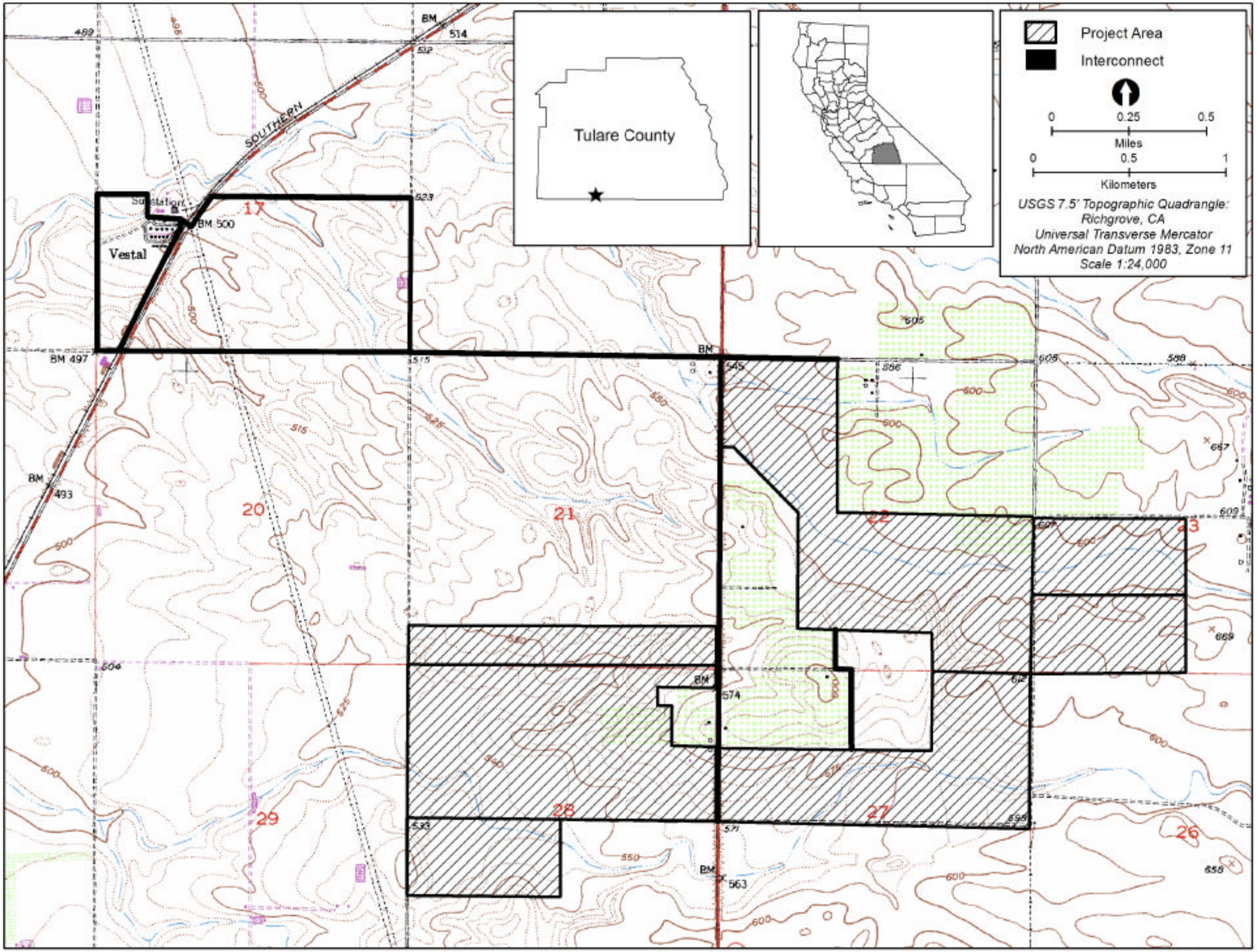
City: Santa Barbara, CA Zip: 93101

Phone: 805-962-0992

Fax: 805-966-1706

Email: andrea.bardsley@amec.com

Project Description: Installation of a solar photovoltaic system at the Tulare Solar Center, which will encompass approximately 1,100 acres on private property in Tulare County, California. The photovoltaic system will be interconnected to and operated in conjunction with the Southern California Edison (SCE) electric grid per the requirements of the National Electric Code and SCE.


Project Area
Interconnect
0
0.25
0.5
Miles
0
0.5
1
Kilometers
USGS 7.5' Topographic Quadrangle:
Richgrove, CA
Universal Transverse Mercator
North American Datum 1983, Zone 11
Scale 1:24,000
Tulare County
Vestal
Substation
BM 500
BM 497
BM 493
BM 514
BM 545
BM 574
BM 563
SOUTHERN
17
20
21
22
23
26
27
28
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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
ds_nahc@pacbell.net

August 2, 2012

Mr. Hubert Switalski, Senior Archaeologist

Amec Environment & Infrastructure, Inc.

104 Anapamu Street, Suite 204A
Santa Barbara, CA 93101

Sent by FAX to: 805-966-1706
No. of Pages: 4

Re: Sacred Lands File Search and Native American Contacts list for the proposed **"Wellhead Electric Company, Inc. Tulare Interconnect Project;"** located in Tulare County, California

Dear Mr. Switalski:

The Native American Heritage Commission (NAHC) conducted a Sacred Lands File searches of the 'area of potential effect,' (APE) based on the USGS coordinates provided and **Native American cultural resources were not identified** within one-half mile of the project area of potential effect (e.g. APE): you specified. Also, please note; the NAHC Sacred Lands Inventory is not exhaustive and does not preclude the discovery of cultural resources during any project groundbreaking activity.

California Public Resources Code §§5097.94 (a) and 5097.96 authorize the NAHC to establish a Sacred Land Inventory to record Native American sacred sites and burial sites. These records are exempt from the provisions of the California Public Records Act pursuant to. California Government Code §6254 (r). The purpose of this code is to protect such sites from vandalism, theft and destruction.

In the 1985 Appellate Court decision (170 Cal App 3rd 604), the court held that the NAHC has jurisdiction and special expertise, as a state agency, over affected Native American resources, impacted by proposed projects including archaeological, places of religious significance to Native Americans and burial sites

The California Environmental Quality Act (CEQA – CA Public Resources Code §§ 21000-21177, amendments effective 3/18/2010) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR) per the CEQA Guidelines defines a significant impact on the environment as 'a substantial, or potentially substantial, adverse change in any of physical conditions within an area affected by the proposed project, including ...objects of historic or aesthetic significance." In order to comply with this provision, the lead agency is required to assess whether the project will have an adverse impact on these resources within the 'area of potential effect (APE), and if so, to mitigate that effect. CA Government Code §65040.12(e) defines "environmental justice" provisions and is applicable to the environmental review processes.

Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries once a project is underway. Local Native Americans may have knowledge of the religious and cultural significance of the historic properties of the proposed project for the area (e.g. APE). Consultation with Native American communities is also a matter of environmental justice as defined by California Government Code §65040.12(e). We urge consultation with those tribes and interested Native Americans on the list that the NAHC has provided in order to see if your proposed project might impact Native American cultural resources. Lead agencies should consider avoidance as defined in §15370 of the CEQA Guidelines when significant cultural resources as defined by the CEQA Guidelines §15064.5 (b)(c)(f) may be affected by a proposed project. If so, Section 15382 of the CEQA Guidelines defines a significant impact on the environment as "substantial," and Section 2183.2 which requires documentation, data recovery of cultural resources.

The 1992 *Secretary of the Interiors Standards for the Treatment of Historic Properties* were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including cultural landscapes. Also, federal Executive Orders Nos. 11593 (preservation of cultural environment), 13175 (coordination & consultation) and 13007 (Sacred Sites) are helpful, supportive guides for Section 106 consultation. The aforementioned Secretary of the Interior's *Standards* include recommendations for all 'lead agencies' to consider the historic context of proposed projects and to "research" the cultural landscape that might include the 'area of potential effect.'

Partnering with local tribes and interested Native American consulting parties, on the NAHC list, should be conducted in compliance with the requirements of federal NEPA (42 U.S.C 4321-43351) and Section 106 4(f), Section 110 and (k) of the federal NHPA (16 U.S.C. 470 *et seq*). Section 4(f) of the Department of Transportation Act of 1966 (23 CFR 774); 36 CFR Part 800.3 (f) (2) & .5, the President's Council on Environmental Quality (CSQ, 42 U.S.C 4371 *et seq.* and NAGPRA (25 U.S.C. 3001-3013) as appropriate. The 1992 *Secretary of the Interiors Standards for the Treatment of Historic Properties* were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including cultural landscapes. Also, federal Executive Orders Nos. 11593 (preservation of cultural environment), 13175 (coordination & consultation) and 13007 (Sacred Sites) are helpful, supportive guides for Section 106 consultation. The NAHC remains concerned about the limitations and methods employed for NHPA Section 106 Consultation.

Also, California Public Resources Code Section 5097.98, California Government Code §27491 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', another important reason to have Native American Monitors on board with the project.

To be effective, consultation on specific projects must be the result of an ongoing relationship between Native American tribes and lead agencies, project proponents and their contractors, in the opinion of the NAHC. An excellent way to reinforce the relationship between a project and local tribes is to employ Native American Monitors in all phases of proposed projects including the planning phases.

Confidentiality of "historic properties of religious and cultural significance" may also be protected under Section 304 of he NHPA or at the Secretary of the Interior discretion if not eligible for listing on the National Register of Historic Places. The Secretary may also be

advised by the federal Indian Religious Freedom Act (cf. 42 U.S.C., 1996) in issuing a decision on whether or not to disclose items of religious and/or cultural significance identified in or near the APE and possibility threatened by proposed project activity.

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

Attachment: Native American Contact List

Native American Contact
Tulare County
August 2, 2012

Santa Rosa Rancheria
Rueben Barrios, Chairperson
P.O. Box 8
Lemoore , CA 93245
(559) 924-1278
(559) 924-3583 Fax

Tache
Tachi
Yokut

Wuksache Indian Tribe/Eshom Valley Band
Kenneth Woodrow, Chairperson
1179 Rock Haven Ct.
Salinas , CA 93906
kwood8934@aol.com
831-443-9702

Foothill Yokuts
Mono
Wuksache

Tule River Indian Tribe
Neil Peyron, Chairperson
P.O. Box 589
Porterville , CA 93258
chairman@tulerivertribe-nsn.
(559) 781-4271
(559) 781-4610 FAX

Yokuts

Tubatulabals of Kern Valley
Dr. Donna Begay, Tribal Chairwoman
P.O. Box 226
Lake Isabella, CA 93240
drbegay@aol.com
(760) 379-4590
(760) 379-4592 FAX

Tubatulabal

Ron Wermuth
P.O. Box 168
Kernville , CA 93238
warmoose@earthlink.net
(760) 376-4240 - Home
(916) 717-1176 - Cell

Tubatulabal
Kawaiisu
Koso
Yokuts

Wuksache Tribe
John Sartuche
1028 East "K" Avenue
Visalia , CA 93292
signsbysarch@aol.com
(559) 636-1136

Wuksache

Sierra Nevada Native American Coalition
Lawrence Bill, Interim Chairperson
P.O. 125
Dunlap , CA 93621
(559) 338-2354

Mono
Foothill Yokuts
Choinumni

Jennifer Malone
637 E Lakeview
Woodlake , CA 93286
indianpopup@sbcglobal.net
559-564-2146 - home
559-280-0712 - cell

Wukchumni
Tachi
Yowlumni

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable for contacting local Native Americans with regard to cultural resources for the proposed Wellhead Electric Company, Inc. Tulare Interconnect Project; located in Tulare County, California for which a Sacred Lands File search and Native American Contacts list were requested.

Native American Contact
Tulare County
August 2, 2012

Santa Rosa Tachi Rancheria
Lalo Franco, Cultural Coordinator
P.O. Box 8
Lemoore , CA 93245
(559) 924-1278 - Ext. 5
(559) 924-3583 - FAX

Tachi
Tache
Yokut

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable for contacting local Native Americans with regard to cultural resources for the proposed Wellhead Electric Company, Inc. Tulare Interconnect Project; located in Tulare County, California for which a Sacred Lands File search and Native American Contacts list were requested.

APPENDIX B – PALEONTOLOGICAL RECORDS SEARCH

July 30, 2012

Dr. Samuel A. McLeod
Vertebrate Paleontology Department
Los Angeles County Museum of Natural History
900 Exposition Boulevard
Los Angeles, CA 90007
213-763-3325
smcleod@nhm.org

Subject: Paleontological Resource Record Search Request for Wellhead Electric Company, Inc. for the Tulare Interconnect Project in Tulare County, CA

Dear Dr. McLeod,

On behalf of Wellhead Electric Company, Inc. (Wellhead), AMEC Environment and Infrastructure, Inc. (AMEC) would like to request a paleontological resource record search for the above referenced project located in Tulare County, California. The project is located on private property adjacent to State Route 65 approximately 15 miles east of the City of Delano, California.

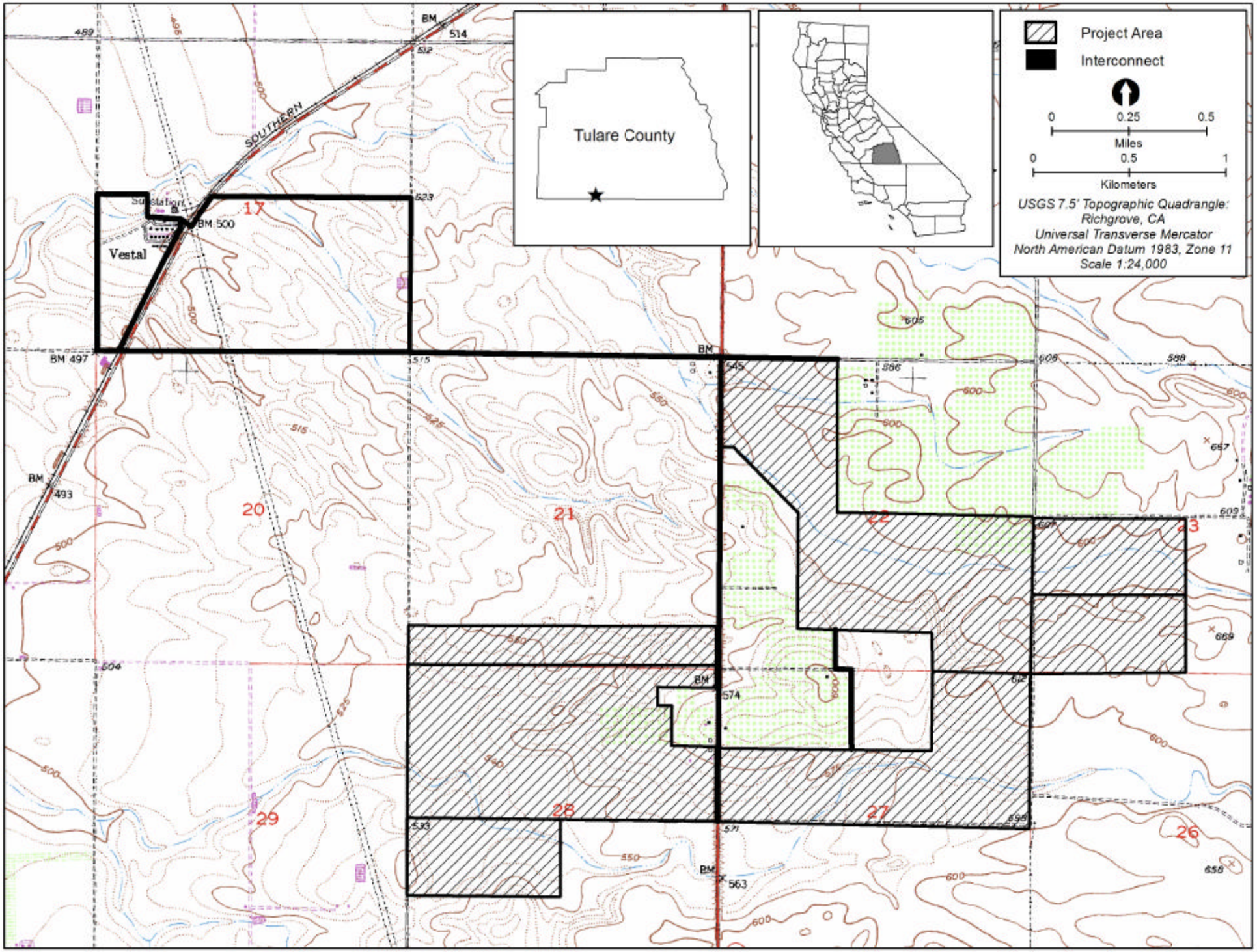
The proposed project entails the installation of a solar photovoltaic system which will encompass approximately 1,100 acres in the planned Tulare Solar Center. The photovoltaic system will be interconnected to and operated in conjunction with the Southern California Edison (SCE) electric grid per the requirements of the National Electric Code and SCE. The project will be completed in compliance with State and County requirements and to the satisfaction of the SCE archaeological and environmental review. Enclosed for ease of reference is a map of the proposed project area on the Richgrove, CA (1973) USGS 7.5-minute Quadrangle map with portions of the project area occupying the following: Sections 15, 16, 17, 21, 22, 23. 27, and 28, Township 24 South, Range 27 East.

We request that your invoice for the requested record search include a specific reference to "Wellhead Electric Company, Inc. –Tulare Interconnect Project". Please contact me if you have any questions or concerns regarding this request. Thank you for your time and assistance.

Kind regards,

Hubert Switalski
Senior Archaeologist
104 W Anapamu Street, Suite 204A
Santa Barbara, CA 93101
Telephone: 805-453-1170

Enclosure: 1) Figure - Richgrove, CA (1973) USGS 7.5-minute Quadrangle


Project Area
Interconnect
0
0.25
0.5
Miles
0
0.5
1
Kilometers
USGS 7.5' Topographic Quadrangle:
Richgrove, CA
Universal Transverse Mercator
North American Datum 1983, Zone 11
Scale 1:24,000
Tulare County
Vestal
Substation
BM 500
BM 497
BM 493
BM 514
BM 545
BM 574
BM 563
SOUTHERN
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Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

Vertebrate Paleontology Section
Telephone: (213) 763-3325
FAX: (213) 746-7431
e-mail: smcleod@nhm.org

3 August 2012

AMEC Environment & Infrastructure, Inc.
104 West Anapamu Street, Suite 204A
Santa Barbara, CA 93101

Attn: Hubert Switalski, Senior Archaeologist

re: Paleontological resources for the proposed Wellhead Electric Company, Inc. - Tulare Interconnect Project, near the community of Richgrove, Tulare County, project area

Dear Hubert:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for the proposed Wellhead Electric Company, Inc. - Tulare Interconnect Project, near the community of Richgrove, Tulare County, project area as outlined on the portion of the Richgrove USGS topographic quadrangle map that Andrea Bardsley sent to me via e-mail on 30 July 2012. We have no fossil vertebrate localities that occur directly within the proposed project area, but we do have localities nearby from rock units that are exposed in the proposed project area.

The elevated terrain of the entire proposed project area has exposures of terrestrial Plio-Pleistocene deposits typically referred to as the Kern River Formation in this area. We have several vertebrate fossil localities from the Kern River Formation, most notably LACM (CIT) 49-56, 478 and LACM 3894, all located south-southeast of the proposed project area and northeast of Bakersfield, that have produced a distinctive fossil fauna (see attached composite fauna list). Four holotypes (name-bearing specimens of new species) are recorded from these localities: the fossil vulture, *Vultur kernensis* Miller 1931, the fossil mustelid carnivore *Brachypsalis angustidens* Hall 1930, the fossil peccary *Prosthennops kernensis* Colbert 1938, and the fossil rodent *Peromyscus pliocenicus* Wilson 1937 (see attached publication list).

The less elevated terrain in the proposed project area, particularly in the southern portion, has surface deposits of younger Quaternary Alluvium, primarily associated with the drainage s

that flow through the proposed project area. These deposits typically do not contain significant vertebrate fossils, at least in the uppermost layers, but we have two vertebrate fossil localities nearby from Quaternary Alluvial deposits: LACM 6701, located due east of the northern part of the proposed project area between Fountain Springs and the White River and LACM 4087, located northeast of the proposed project area due east of Terra Bella. Both of these localities produced specimens of fossil mammoth, *Mammuthus*.

Surface grading or shallow excavations in the younger Quaternary Alluvium exposed in the less elevated terrain of the proposed project area probably will not encounter significant vertebrate fossils. Deeper excavations in those areas that extend down into older Quaternary deposits, as well as any excavations in the exposures of the Kern River Formation in the more elevated terrain of the proposed project area, however, may well uncover significant vertebrate fossil remains. Any substantial excavations in the proposed project area, therefore, should be monitored closely to quickly and professionally recover any fossil remains discovered. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Sincerely,

Samuel A. McLeod

Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosures: appendices, invoice

Composite fossil fauna list from the Kern River Formation
based on specimens in the LACM collections

Reptilia		
Chelonia		
Testudinidae		
Geochelone		
Aves		
Accipitriformes		
Accipitridae		
Accipitrinae		
Ciconiiformes		
Vulturidae		
Vultur	*kernensis*	HOLOTYPE
Mammalia		
Artiodactyla		
Antilocapridae		
Camelidae		
Titanotylopus		
Palaeomerycidae		
Pediomeryx		
Tayassuidae		
Prosthennops	*kernensis*	HOLOTYPE
Carnivora		
Canidae		
Aelurodon		
Canis		
Osteoborus		
Vulpes		
Felidae		
Mustelidae		
Brachypsalis	*angustidens*	HOLOTYPE
Eomellivora	*wimani*	Figured
Procyonidae		
Bassariscus	*antiquus*	Published
Lagomorpha		
Leporidae		
Hypolagus	*edensis*	Figured
Hypolagus	*limnetus*	Figured
Perissodactyla		
Rhinocerotoidea		
Equidae		
Neohipparion	*molle*	
Pliohippus	*spectans*	Figured
Rodentia		
Cricetidae		
Peromyscus	*pliocenicus*	HOLOTYPE
Heteromyidae		
Sciuridae		
Spermophilus	*argonatus*	Figured
Xenarthra		
Megalonychidae		

Publications on LACM specimens from the Kern River Formation

Black, Craig C. 1963. A review of the North American Tertiary Sciuridae. Bulletin of the Museum Comparative Zoology, 130(3):111-248.

Colbert, Edwin H. 1938. Pliocene peccaries from the Pacific Coast region of North America. Carnegie Institution of Washington Publication, 487(6):241-269.

Hall, E. Raymond 1930. A bassarisk and a new mustelid from the later Tertiary of California. Journal of Mammalogy, 11(1):23-26.

Hoffmeister, Donald F. 1945. Cricetine Rodents of the Middle Pliocene of the Mulholland Fauna, California. Journal of Mammalogy, 26(2):186-191.

Miller, Loye Holmes 1931. Bird remains from the Kern River Pliocene of California. Condor, 33(2):70-72.

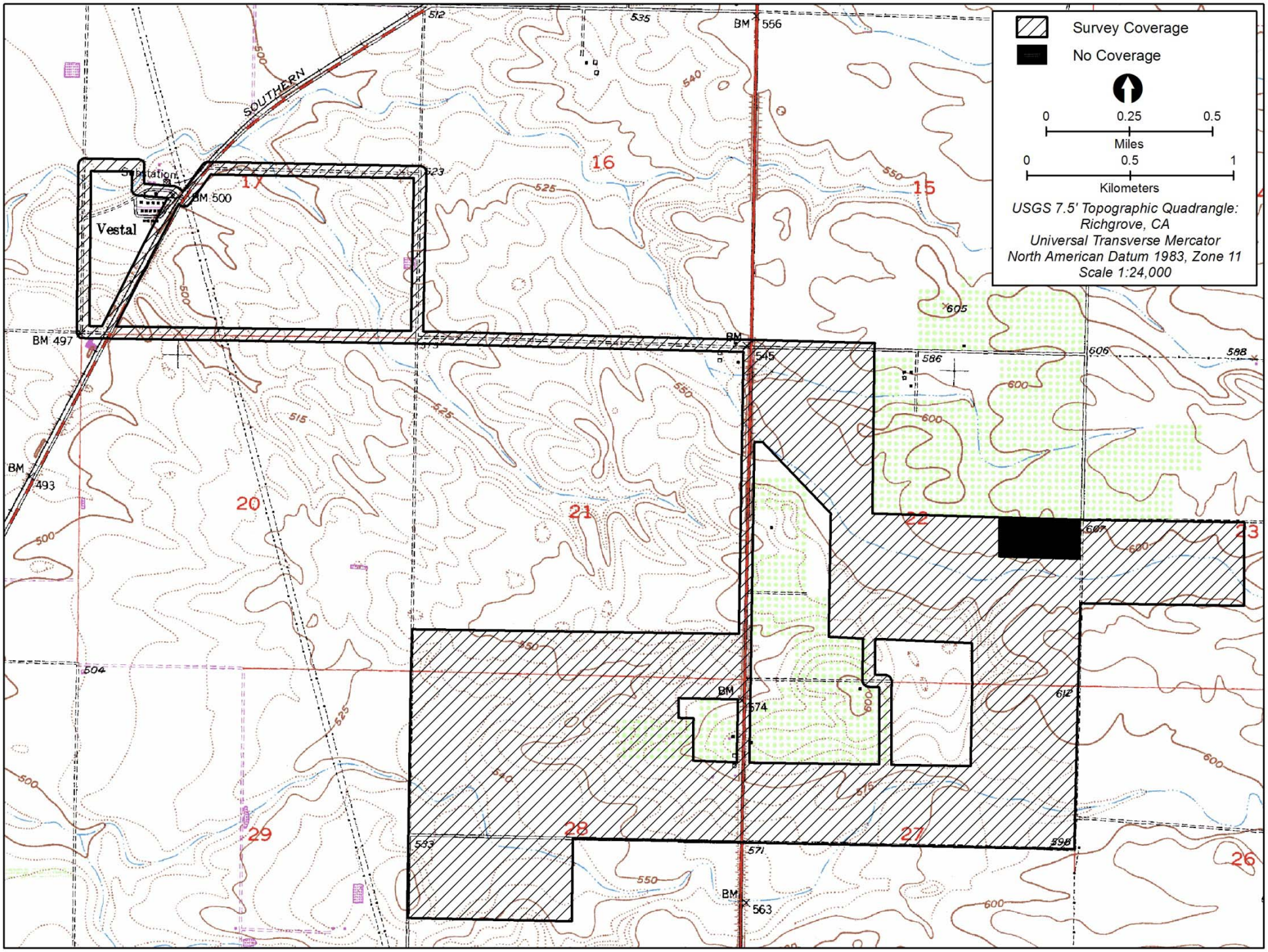
Stock, Chester 1935. Deep-well record of fossil mammal remains in California. Bulletin of the American Association of Petroleum Geologists, 19(7):1064-1068.

Stock, Chester and Hall, E. Raymond 1933. The Asiatic genus *Eomellivora* in the Pliocene of California. Journal of Mammalogy, 14(1):63-65.

White, John A. 1988. The Archaeolaginae (Mammalia, Lagomorpha) of North America, excluding *Archaeolagus* and *Panolax*. Journal of Vertebrate Paleontology, 7(4):425-450.

Wilson, Robert W. 1937. New Middle Pliocene rodent and lagomorph faunas from Oregon and California. Carnegie Institution of Washington Publication, 487(1):1-19.

APPENDIX C – ARCHAEOLOGICAL SURVEY COVERAGE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0.5
Miles
0
0.5
1
Kilometers
USGS 7.5' Topographic Quadrangle:
Richgrove, CA
Universal Transverse Mercator
North American Datum 1983, Zone 11
Scale 1:24,000
SOUTHERN
Substation
Vestal
BM 500
BM 497
BM 493
BM 556
BM 545
BM 574
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Appendix E

Phase I Environmental Site Assessment

PHASE I ENVIRONMENTAL SITE ASSESSMENT

Proposed Tulare Solar Center
Tulare County, California

AEC Project No. 12-131SD
October 25, 2012

Prepared for:

Tulare Solar Center, LLC
650 Bercut Drive, Suite C
Sacramento, California 95811

Prepared by:

Advantage Environmental Consultants, LLC
145 Vallecitos De Oro, Suite 201
San Marcos, California 92069
Phone (760) 744-3363 • FAX (760) 744-3383

ADVANTAGE
ENVIRONMENTAL
CONSULTANTS, LLC.

October 25, 2012

Mr. Gary Franzen
Tulare Solar Center, LLC
650 Bercut Drive, Suite C
Sacramento, California 95811

Subject: **Phase I Environmental Site Assessment**
Proposed Tulare Solar Center
Tulare County, California
AEC Project No. 12-131SD

Dear Mr. Franzen:

Advantage Environmental Consultants, LLC (AEC) has performed a Phase I Environmental Site Assessment (ESA) in conformance with the scope and limitations of American Society for Testing and Materials Practice E 1527-05, of the above-referenced property. This ESA included public environmental agency and historical record reviews, interviews, site observations, and report preparation. This report includes AEC's findings, conclusions, recommendations, and supporting documentation.

We appreciate the opportunity to be of service on this project. If you should have any questions regarding this report, or if we can be of further assistance, please contact me at (760) 744-3363.

Sincerely,

ADVANTAGE ENVIRONMENTAL CONSULTANTS, LLC

Daniel Weis, R.E.H.S.
Branch Manager
Western Regional Office

145 Vallecitos De Oro • Suite 201 • San Marcos, CA 92069 • Phone: 760-744-3363 • Fax: 760-744-3383 • Email: dweis@aec-env.com

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1.0 Executive Summary

1.1 Summary and Findings

At the request of Tulare Solar Center, LLC, Advantage Environmental Consultants, LLC (AEC) has conducted a Phase I Environmental Site Assessment (ESA) in conformance with the scope and limitations of American Society for Testing and Materials (ASTM) Practice E 1527-05, of the proposed Tulare Solar Center in Tulare County, California (hereinafter referred to as the "Site").

The Site does not have a recorded physical address and is further identified by Tulare County Assessor's Parcel Numbers 339-100-07, 339-110-006, 339-110-10, 339-110-16, 339-140-01, 339-140-08, and 339-140-010, which are all zoned Exclusive Agricultural (AE-40) and are designated Rural Valley Lands under the Tulare County General Plan. Also included in the area being assessed (i.e. Site) are proposed easements running north and west from the northwestern parcel boundary and an easement trending north from the southeastern portion of the Site.

There are no habitable structures on the Site. Power poles and transmission lines are present along the Site's northern easement and perimeter roads. Water at the Site and its adjoining properties is provided by private water supply wells (deep and/or domestic). Electricity at the Site and in the area is provided by Southern California Edison with natural gas provided by Southern California Gas Company. The area surrounding the Site primarily consists of vacant land and agricultural properties. No significant environmental concerns were noted during AEC's reconnaissance of the Site. In addition, no current uses of adjoining properties or properties in the surrounding vicinity were identified as a potential environmental concern to the Site.

AEC reviewed standard regulatory record sources which included Federal, State and local environmental databases provided by Environmental FirstSearch, for information pertaining to documented and/or suspected releases of regulated hazardous substances and/or petroleum products within specified search distances. The Site, adjoining properties and properties within one-mile were not listed in any of the searched databases. Other regulatory resources consulted during the preparation of this assessment also did not reveal environmental concerns in connection with the Site.

Historical resources reviewed during the preparation of this ESA included aerial photographs and topographic maps. According to the historical resources reviewed, the Site is currently and has historically been utilized for agricultural purposes. During historical agricultural activities throughout the State of California, various pesticides and more specifically organochlorine pesticides (OCPs) were commonly applied during the normal course of agricultural operations. Such compounds have since been banned from production and use in the United States. Section 105215 of the California Health and Safety Code discusses the regulatory reporting of incidents that pertain to pesticide spills and accidental releases of pesticide products. Based on the regulatory and historical research completed during the preparation of this assessment, no information has been revealed that would lead AEC to believe that an accidental spill or release of pesticide products has occurred at the Site. In addition, neither stressed vegetation, nor evidence of the storage of pesticides was observed on the property during the Site reconnaissance or based on regulatory and historical research reviews. As such, based on the current and proposed use of the Site, the historical agricultural use of the Site is not considered to be a recognized environmental condition in connection with the Site.

Because the Site is slated to be developed as a solar electric generating facility and is not proposed to be developed for residential use, long term exposure risk to agricultural chemicals in soil at the Site (if present) is considered minimal. However, in the event that the land use of the Site changes to a residential use, an evaluation of the potential presence of such products at the Site should be considered. In addition, if future activities associated with the development of the solar electric generating facility will involve the grading of Site soils, proper dust control measures should be implemented as part of such activities. If soil is to be exported from the Site during future construction activities, such soil should be evaluated by the receiving site(s) to ensure that it is suitable for reuse at the property or properties in question.

1.2 Conclusions

This assessment has revealed no evidence of recognized environmental conditions in connection with the Site. Additional environmental investigation at the Site is not recommended at this time.

2.0 Introduction

2.1 Purpose

The purpose of this Phase I ESA is to provide a professional opinion on the presence of recognized environmental conditions and other suspect environmental conditions in connection with the Site, as they existed on the date of the site inspection, and to recommend whether further investigation is required. ASTM Standard Practice E 1527-05, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, defines good commercial and customary practice for conducting an environmental site assessment of a parcel of commercial real estate with respect to the range of contaminants pertinent to the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as well as petroleum products. As such, this ESA is intended to satisfy one of the requirements that permit the user to qualify for the bona fide prospective purchaser, innocent landowner or contiguous property owner liability protections under the Brownfields Revitalization Act (also known as the 2002 Brownfields Amendments) of CERCLA. In other words, this ESA represents one of the practices that constitute “all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice” as defined in 42 USC Section 9601(35)(B) and 40 CFR Part 312.

The goal of the process is to identify recognized environmental conditions, which are defined by the Practice as “the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of release of any hazardous substances or petroleum products into the structures on the property or into the ground, groundwater or surface water of the property”. The term *recognized environmental condition* includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include de minimis conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

2.2 Detailed Scope of Services

The Phase I ESA was conducted in accordance with generally accepted Phase I industry standards using ASTM Standard Practice E 1527-05 and as described in AEC’s Proposal Number P12-159SD dated August 20, 2012. The following services were provided for this assessment:

- An evaluation of standard environmental record sources contained within Federal, State and local environmental databases within specific search distances.
- An evaluation of additional environmental record sources obtained from local regulatory agencies.
- A qualitative evaluation of the physical characteristics of the Site through a review of published topographic, geologic, and hydrogeologic maps; published groundwater data; and area observations to characterize surface water flow in the Site area.
- An evaluation of past Site and adjacent/nearby property uses through a review of historical resources including aerial photographs and topographic maps.

- A physical inspection of the Site (interior and exterior) conducted to search for conditions indicative of potential environmental concerns including USTs, ASTs, associated tank piping; stained soil or pavement, equipment that may contain or have historically contained polychlorinated biphenyls (PCBs), and other potential environmental concerns as defined in the ASTM-2005 standard.

- A physical assessment of indications of past uses and visual observations of adjacent and surrounding properties (from curbside or public spaces) to assess potential impacts to the Site.

- Interviews completed with representatives of the current owner of the Site and local regulatory officials.

- The preparation of this Phase I ESA report, which includes the findings of the study and our opinion regarding their level of significance. Conclusions have been drawn based on the significance levels of the findings with subsequent recommendations provided.

2.3 Significant Assumptions

This Phase I ESA was conducted in accordance with ASTM guidelines for the performance of such assessment. No other warranties either express or implied, are made by AEC. AEC's evaluations, analyses, and opinions should not be taken as representations regarding subsurface conditions or the actual value of the Site. Subsurface conditions may differ from the conditions implied by the surficial observations, and can only be reliably evaluated through intrusive techniques.

Documentation and data provided by Tulare Solar Center, LLC, designated representatives of Tulare Solar Center, LLC, other interested third parties, or from the public domain, and referred to in the preparation of this assessment, are assumed to be complete and correct and have been used and referenced with the understanding that AEC assumes no responsibility or liability for their accuracy. AEC's conclusions are based upon such information and documentation and on our observations of Site conditions, as they existed on the date of the site inspection. Because Site conditions may change significantly over a short period of time and additional data may become available, data reported and conclusions drawn in this report are limited to current conditions and may not be relied upon on a significantly later date.

2.4 Limitations and Exceptions

Reasonable efforts have been made during this assessment to uncover evidence of underground storage tanks (USTs), aboveground storage tanks (ASTs), ancillary equipment associated with such tanks, and other subsurface structures. "Reasonable efforts" are limited to information gained from visual observation of unobstructed areas, recorded database information held in public record, and available information gathered from interviews. Such methods may not identify subsurface equipment that may have been hidden from view due to paving, construction or debris pile storage, or incorrect information from sources.

This investigation was not an environmental compliance audit. While some observations and discussion in this report may address conditions and/or operations that may be regulated, the regulatory compliance of those conditions and/or operations is outside the scope of this investigation. Nothing in this report constitutes a legal opinion or legal advice. For information

regarding specific individual or organizational liability, AEC recommends consultation with independent legal counsel.

This ESA does not address non-scope ASTM considerations including asbestos containing materials (ACMs), radon, lead-based paint (LBP), lead in drinking water, wetlands, protected environments and habitat, industrial hygiene concerns, indoor air quality, vapor intrusion and high voltage power lines.

2.5 Special Terms and Conditions

No special terms and conditions between AEC and Tulare Solar Center, LLC pertinent to the findings of this ESA or methodology used to complete this assessment are noted. In addition, AEC does not have a financial interest in the Site.

2.6 User Reliance

This report was prepared for use solely and exclusively by Tulare Solar Center, LLC and other parties (as identified by Tulare Solar Center, LLC). This Phase I ESA may be provided by Tulare Solar Center, LLC, in its sole discretion, to such third parties and may be relied upon by such third parties to the same extent that this report may be relied upon by Tulare Solar Center, LLC. No other use or disclosure is intended or authorized by AEC. This Phase I ESA report will also be included as a technical attachment to a forthcoming Environmental Impact Report pertaining to the proposed project. In the preparation of this ESA, AEC has used the degree of care and skill ordinarily exercised by a reasonably prudent environmental professional in the same community and in the same time frame given the same or similar facts and circumstances. No other warranties are made to any third party, either express or implied.

3.0 Site Description

3.1 Location and Legal Description

The Site is comprised of historically disturbed agricultural lands in an unincorporated area of Tulare County, California. The project site is located along State Route 65, 4 miles south of Ducor, California. Porterville Highway (State Route 65) bisects the Site in a north to south direction. Cross streets to State Route 65 located in the vicinity of the Site include Avenue 12, Avenue 16, and Avenue 24. The Site comprises seven legal parcels identified as APNs 339-100-07, 339-110-006, 339-110-10, 339-110-16, 339-140-01, 339-140-08, and 339-140-010, which are all zoned Exclusive Agricultural (AE-40) and are designated Rural Valley Lands under the Tulare County General Plan. Also included in the area being assessed (i.e. Site) are proposed easements running north and west from the northwestern parcel boundary and an easement trending north from the southeastern portion of the Site. A Vicinity Map is included in section 13.1.

3.2 Site and Vicinity General Characteristics

The Site and its adjacent/nearby properties are situated in the southern portion of Tulare County, California, east of the City of Delano and south of the City of Ducor. Surrounding areas are primarily utilized for agricultural purposes. Additional details pertaining to the Site and its adjoining properties are provided in the sections below.

3.3 Current Use of the Site

The Site is currently utilized for agricultural purposes (growing of hay and barley), unimproved roads, and proposed easement areas.

3.4 Description of Structures, Roads, Other Improvements on the Site

There are no habitable structures on the Site. Power poles and transmission lines are present along the Site's northern easement and perimeter roads. Water at the Site and its adjoining properties is provided by private water supply wells (deep and/or domestic). Electricity at the Site and in the area is provided by Southern California Edison with natural gas provided by Southern California Gas Company. A Site Plan is included in Section 13.2. Photographs taken of the Site are included in Section 13.3.

3.5 Current Uses of the Adjoining Properties

The area surrounding the Site primarily consists of vacant land and agricultural properties. Scattered residential properties are located off-Site from the subject property to the northwest, south, and east. These residential properties are depicted on the Site Plan in Section 13.2. AEC performed a visual inspection of adjoining properties from the subject Site property lines. No current uses of adjoining properties or properties in the surrounding vicinity were identified as a potential environmental concern to the Site.

4.0 User Provided Information

4.1 Title Records

AEC was provided with a preliminary title report for the majority of the Site, prepared by First American Title Insurance Company and dated March 25, 2011. According to the title report, the Site is currently vested in Si Paul Changala and Mary Louise Changala, Trustees under declaration of trust dated June 19, 1975. No environmentally related liens, deed restrictions or activity and use limitations were noted in the documents provided. The preliminary title report is included in Section 13.4.

4.2 Environmental Liens or Activity and Use Limitations

The client was unaware of environmental related liens or activity and use limitations (i.e. engineering or institutional controls) that are related to potential recognized environmental conditions at the Site.

4.3 Specialized Knowledge

The client was unaware of specialized knowledge pertinent to potential recognized environmental conditions at the Site.

4.4 Commonly Known or Reasonably Ascertainable Information

The client was unaware of commonly known or reasonably ascertainable information pertinent to potential recognized environmental conditions at the Site.

4.5 Valuation Reduction for Environmental Issues

The client was unaware of information pertaining to the relationship of the value of the Site to the estimated fair market value of the Site that might indicate that significant contamination exists at the Site.

4.6 Owner, Property Manager, and Occupant Information

The majority of the Site is currently owned and managed by Si Paul Changala and Mary Louis Changala. A 20-acre parcel of the Site (APN 339-110-16) is owned and managed by Trilogy Limited, LP. The Site is currently in use for agricultural purposes (hay and barley growing/harvesting).

4.7 Reason for Performing Phase I ESA

Tulare Solar Center, LLC (user of this report) retained AEC to conduct this Phase I ESA in connection with the planned lease of the Site and to identify environmental issues which may be present. This Phase I ESA report will also be included as a technical attachment to a forthcoming Environmental Impact Report pertaining to the proposed project.

5.0 Records Review

5.1 Standard Environmental Record Sources

AEC reviewed Federal and State environmental databases in an Environmental FirstSearch™ report provided by FirstSearch Technology Corporation for information pertaining to documented and/or suspected releases of regulated hazardous substances and/or petroleum products within specified search distances. A copy of the Environmental FirstSearch™ report is included in Section 13.5.

AEC also reviewed unmappable sites listed in the environmental database report by cross-referencing addresses and site names. Unmappable sites are sites that cannot be plotted with confidence, but can be located by zip code or city name. In general, a site cannot be mapped because of inaccurate or missing location information in the record provided by the regulatory agency. Any unmappable sites that AEC identifies within the specified search radii were evaluated as part of the preparation of this report.

The following Federal databases related to potential on-site and off-site sources of contamination were reviewed and interpreted by AEC:

Federal Databases	ASTM Search Distance From Site
National Priorities List (NPL)	One mile
Delisted NPL	One mile
Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS)	One mile
CERCLIS No Further Remedial Action Planned (NFRAP)	One mile
Resource Conservation and Recovery Act (RCRA) CORRACTS Hazardous Waste Treatment, Storage and Disposal (TSD) Facilities	One mile
RCRA non-CORRACTS Hazardous Waste TSD Facilities	One mile
RCRA Hazardous Waste Generators (RCRA GEN)	One mile
Emergency Response Notification System (ERNS)	One mile
Federal Institutional/Engineering Control Registries (IC/EC) and Brownfields	One mile

The following State/local databases related to potential on-site and off-site sources of contamination were also searched and reviewed:

State/Local Databases	Search Distance From Site
State-equivalent NPL and CERCLIS (State Sites)	One mile
State Voluntary Cleanup Sites (VCP)	One mile
State Landfill and/or Solid Waste Disposal Sites (SWF/LF)	One mile
State Leaking Storage Tank (LUST)	One mile
State Registered Storage Tank (UST)	One mile
State Institutional/Engineering Control Registries (IC/EC) and Brownfields	One mile
Tulare County Environmental Health Department and California Department of Toxic Substances Control (PERMITS and OTHER)	One mile

Descriptions/sources of each of the above referenced regulatory databases and the dates these databases were last updated by the applicable regulatory agencies are included in the Environmental FirstSearch™ report. Several non-ASTM databases were also searched to a one mile radius as part of the research effort. The descriptions of each database and their data release frequency are included in the regulatory database reports.

Subject Site

The Site was not identified in the standard and non-ASTM regulatory databases reviewed in the Environmental FirstSearch™ Report.

Adjoining and Nearby Properties

No off-site facilities were listed within one-mile of the Site on the databases searched by Environmental FirstSearch™. All listings identified beyond one-mile of the Site are not expected to have adversely impacted the Site. This opinion is based on several factors including the distance of the off-Site listed properties from the Site, orientation of the listed properties relative to the Site, interpreted direction of groundwater flow, and/or regulatory case status information for the various properties as described in the database report.

5.2 Physical Setting Sources

The following physical setting sources were reviewed to provide information about the topographic, hydrologic, geologic and/or hydrogeologic characteristics of the Site.

5.2.1 Topography and Hydrology

USGS Topographic Quadrangle

Based on a review of the United States Geological Survey (USGS) 7.5 Minute Series, Richgrove, CA Topographic Quadrangle map dated 1973, the elevation of the Site ranges from approximately 650 feet above mean sea level in the southeast portion of the Site to 500 feet above mean sea level along the northwestern Site easements. Aside from unimproved roads and easements for transmission lines, the Site is depicted as vacant and undeveloped. Adjacent properties are also generally depicted as vacant and undeveloped.

Hydrology/Storm Water Management

Slope and surface drainage patterns on the Site are to the northwest. Surface water runoff is facilitated by various drainages. The Site does not appear to receive significant drainage from off-site properties.

5.2.2 Geology

The Site lies within the Great Valley Geomorphic Province of California. This geomorphic province is an alluvial plain about 50 miles wide and 400 miles long in the central part of California. Its northern part is the Sacramento Valley, drained by the Sacramento River and its southern part is the San Joaquin Valley drained by the San Joaquin River. The Great Valley is a trough in which sediments have been deposited almost continuously since the Jurassic (about 160 million years ago). According to geologic map sources, the Site appears to be underlain by

Plio-Pleistocene non-marine deposits. Such deposits are derived from basin and alluvial deposits generally characterized as clays and fine grained silts with slow infiltration rates.

5.2.3 Hydrogeology

According to the Water Quality Control Plan for the Tulare Lake Hydrologic Region, published by the Central Valley RWQCB, the Site is situated in the Tule Subbasin of the San Joaquin Valley Groundwater Basin. Groundwater within the Tule Subbasin is listed with existing beneficial use designations for municipal, agricultural, and industrial supply purposes. Information obtained from the California Department of Water Resources revealed groundwater depths measured greater than 300 feet below ground surface at wells located in the vicinity of the Site. The groundwater flow direction is anticipated to follow regional topography toward the northwest.

5.3 Historical Use Information on the Subject Site and Adjoining Properties

Several historical sources (as described in the following sections) were reviewed during this assessment to develop a history of the previous uses of the Site and to help identify the likelihood of past uses having led to recognized environmental conditions in connection with the Site.

5.3.1 Aerial Photographs

AEC reviewed aerial photographs dated 2005 and 2012 provided by online resources. The Site and adjacent areas appear as vacant and in use for agricultural purposes on the photographs. Adjacent roads and residences are also in their current configurations on all of the photographs.

5.3.2 Topographic Maps

AEC reviewed topographic maps of the subject property from 1929, 1942, 1954, 1971, and 1986 provided by online resources. The majority of the Site is depicted as vacant and undeveloped on all of the maps with select areas indicative of agriculture. Adjacent properties are depicted similar to the Site. The adjacent roadways and residential dwellings are depicted in each of the maps similar to their current configurations.

5.3.3 State of California Division of Oil and Gas Records

According to online resources provided by the California Department of Conservation, Division of Oil, Gas and Geothermal Resources, three dry, abandoned oil wells are located on the Site. The wells were reportedly not utilized for oil production and were subsequently abandoned at the time they were found to be non-producing. Several additional dry, abandoned oil wells were also noted within one-mile of the Site. The locations of the former wells at the Site are depicted on the Site Plan included in Section 13.2. Information pertaining to the abandonment of the wells obtained from the California Department of Conservation is included in Section 13.6 of this report.

6.0 Site Reconnaissance

The objective of the Site reconnaissance was to obtain information indicating the likelihood of recognized environmental conditions in connection with the Site. The reconnaissance was conducted on August 31, 2012.

6.1 Methodology and Limiting Conditions

The Site reconnaissance consisted of walking the Site and driving along roadways (for viewing of adjacent/nearby properties). Full access to the Site was provided. As stated previously, a Site Plan is included in Section 13.2. Photographs of the Site were taken to document existing Site conditions and are included and described in Section 13.3.

6.2 General Site Setting

The Site is comprised of historically disturbed agricultural lands in an unincorporated area of Tulare County, California. The project Site is located along State Route 65, 4 miles south of Ducor, California. Porterville Highway (State Route 65) bisects the Project Site in a north to south direction. Cross streets to State Route 65 located in the vicinity of the Site include Avenue 12, Avenue 16, and Avenue 24. Surrounding areas are primarily utilized for agricultural purposes. Aside for some likely agricultural chemical use on agricultural properties in the vicinity, the current uses of the Site and adjoining properties (listed in Section 3.5) are not ones that are indicative of the use, treatment, storage, disposal or generation of significant quantities of hazardous substances or petroleum products.

6.3 Site Observations

AEC examined the Site for evidence of the following potential environmental concerns:

Conditions	Not Observed or Noted	Observed or Noted	Significant Concern?
Hazardous Substances/Petroleum Products	X		--
Waste Generation/Storage/Disposal	X		--
ASTs	X		--
USTs	X		--
PCB Containing Equipment	X		--
Chemical/Petroleum Odors	X		--
Pools of Liquid	X		--
Floor Drains/Sumps/Wells	X		--
Drums	X		--
Stains or Corrosion	X		--
Unidentified Substance Containers	X		--
Stained Soil or Pavement	X		--
Stressed Vegetation	X		--
Pits, Ponds or Lagoons	X		--
Wastewater Discharges/Disposal Systems	X		--
Septic Systems/Cesspools	X		--
Non-Hazardous Solid Waste Disposal Areas	X		--
Drinking Water Systems/Water Wells	X		--
Other Wells	X		--

Conditions	Not Observed or Noted	Observed or Noted	Significant Concern?
Other Potential Environmental Concerns		X	No

Other Potential Environmental Concerns

The Site is currently and has historically been utilized for agricultural purposes. During historical agricultural activities throughout the State of California, various pesticides and more specifically OCPs were commonly applied during the normal course of agricultural operations. Such compounds have since been banned from production and use in the United States. Section 105215 of the California Health and Safety Code discusses the regulatory reporting of incidents that pertain to pesticide spills and accidental releases of pesticide products. Based on the regulatory and historical research completed during the preparation of this assessment, no information has been revealed that would lead AEC to believe that an accidental spill or release of pesticide products has occurred at the Site. In addition, neither stressed vegetation, nor evidence of the storage of pesticides was observed on the property during the Site reconnaissance or based on regulatory and historical research reviews. As such, based on the current and proposed use of the Site, the historical agricultural use of the Site is not considered to be a recognized environmental condition in connection with the Site.

Because the Site is slated to be developed as a solar electric generating facility and is not proposed to be developed for residential use, long term exposure risk to agricultural chemicals in soil at the Site (if present) is considered minimal. However, in the event that the land use of the Site changes to a residential use, an evaluation of the potential presence of such products at the Site should be considered. In addition, if future activities associated with the development of the solar electric generating facility will involve the grading of Site soils, proper dust control measures should be implemented as part of such activities. If soil is to be exported from the Site during future construction activities, such soil should be evaluated by the receiving site(s) to ensure that it is suitable for reuse at the property or properties in question.

7.0 Interview Information

7.1. Interview With Owners

As stated previously, the majority of the Site is currently owned and managed by Si Paul Changala and Mary Louis Changala. A 20-acre parcel of the Site (APN 339-110-16) is owned and managed by Trilogy Limited, LP. Mr. and Mrs. Changala were interviewed during the Site reconnaissance. The portion of the Site owned by Mr. and Mrs. Changala was said to be purchased in 1979. The Site is reportedly used for dry land farming of hay and barley. According to Mr. Changala, pesticides are occasionally used in the farming operations, however there are no pesticide storage or mixing areas located on the Site. Mr. Stuart Knowles, president of Trilogy Asset Management, Inc. and owner representative for the 20-acre portion of the Site owned by Trilogy Limited, LP, completed an environmental questionnaire pertaining to the Site. Mr. Knowles stated that he was unaware of environmental concerns at the Site and environmental liens or deed restrictions recorded against the Site. A copy of the completed questionnaire is included in Section 13.7.

7.2 Interview With Site Managers

The Site owners are also considered to be the Site Managers. Interviews completed with the Site owners are discussed in Section 7.1 above.

7.3 Interviews With Occupants

The Site is currently used for agricultural purposes and the Site owners are considered the occupants. Interviews completed with the Site owners are discussed in Section 7.1 above.

7.4 Interview With Local Government Official

During the preparation of this assessment, various regulatory agencies were contacted during the regulatory records search pertaining to the Site. Information obtained during the regulatory records search is included in pertinent sections of this report.

7.5 Interview With Others

No interviews with other persons knowledgeable of the historical use of the Site were conducted during the preparation of this ESA.

8.0 Findings, Opinion, Conclusions and Recommendations

Advantage Environmental Consultants, LLC has performed a Phase I Environmental Site Assessment, in conformance with the scope and limitations of ASTM Practice E 1527-05 of the Proposed Tulare Solar Center (Tulare County APNs 339-100-07, 339-110-006, 339-110-10, 339-110-16, 339-140-01, 339-140-08, and 339-140-010. Qualifications for the environmental professional involved in the performance of this ESA are included in Section 13.8. Any exceptions to, or deletions from, this practice are described in Section 9.0 of this report.

This assessment has revealed no evidence of recognized environmental conditions in connection with the Site. Additional environmental investigation at the Site is not recommended at this time.

9.0 Deviations and Data Gaps

No deviations from the ASTM-2005 standard or data gaps as defined in the ASTM-2005 standard that would alter AEC's conclusions and recommendations regarding the Site were noted during the preparation of this assessment.

10.0 Additional Services

No additional services were completed by AEC during the preparation of this assessment.

11.0 References

ASTM, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, ASTM Designation E 1527-05;

California Geological Survey (CGS), 2002, California Geomorphic Provinces Note 36, Electronic Copy;

California Geological Survey, 1964, Geologic Atlas of California Bakersfield Sheet, Map No. 002, Compilation by: Arthur R. Smith;

California State Water Resources Control Board GeoTracker online database: http://www.geotracker.swrcb.ca.gov;

Central Valley Regional Water Quality Control Board, 2004, Water Quality Control Plan for the Tulare Lake Basin;

California Department of Water Resources, http://www.water.ca.gov

Environmental FirstSearch regulatory database report dated September 5, 2012;

State of California Department of Conservation, Division of Oil and Gas And Geothermal Resources: http://www.consrv.ca.gov/DOG/maps/index_map.htm.

12.0 Signatures and Qualifications of Environmental Professionals

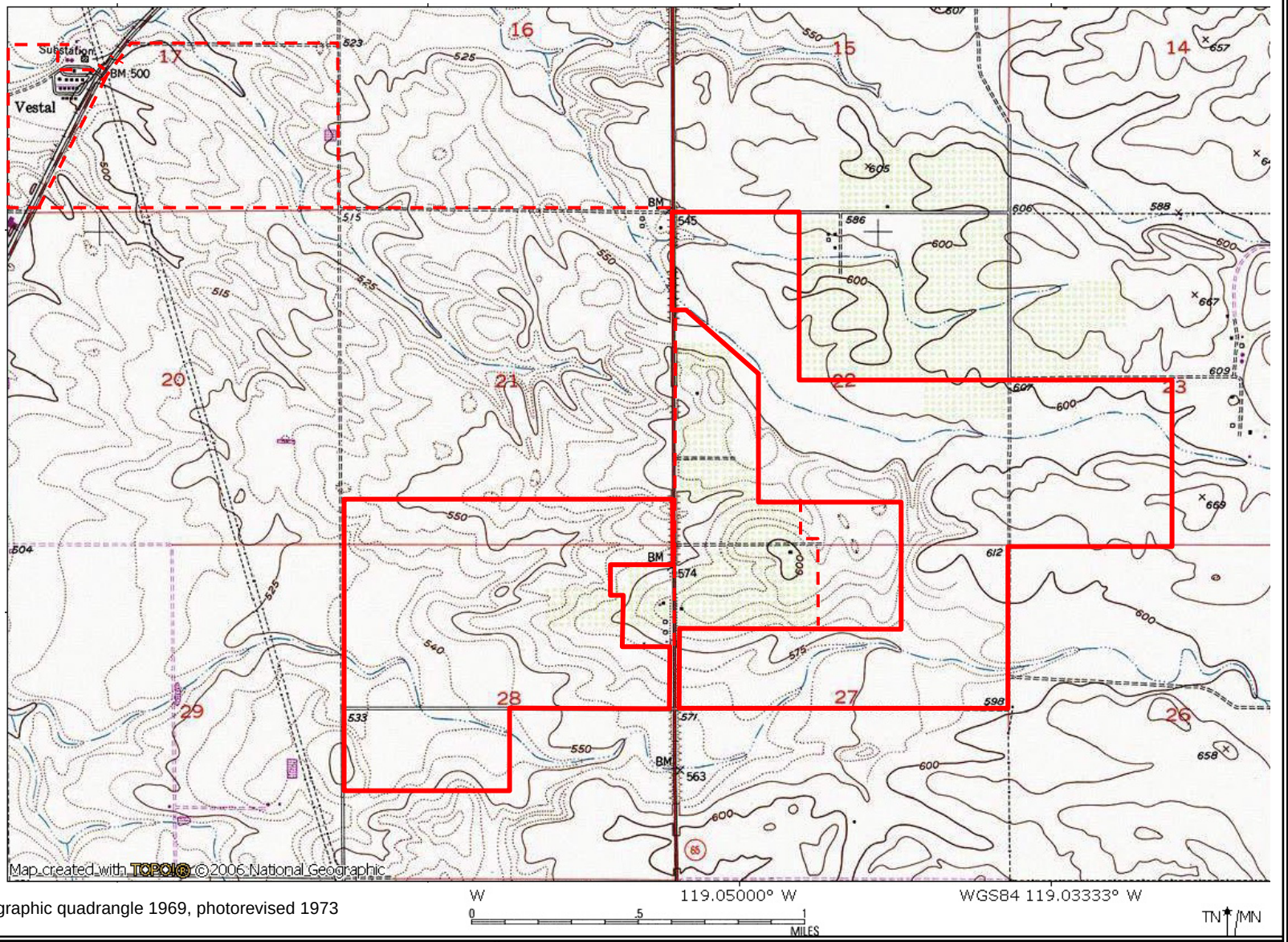
I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in 40 CFR 312.10. I have the specific qualifications based on education, training and experience to assess a property of the nature, history and setting of the subject Site. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

_____
Daniel Weis, R.E.H.S.

Qualifications for the environmental professional involved in the performance of the Phase I ESA are included in Section 13.8.

13.0 Appendices

13.1 Vicinity Map



Site Boundary

Site Easement

Richgrove, CA 7.5' topographic quadrangle 1969, photorevised 1973

Advantage Environmental Consultants, LLC

145 Vallecitos De Oro, Suite 201
San Marcos, CA 92069

Phone: 760-744-3363
Fax: 760-744-3383

Vicinity Map
Proposed Tulare Solar Center
Tulare County, California

Work Order No.:	Report Date:	Drawn By:
12-131SD	October 2012	TJ

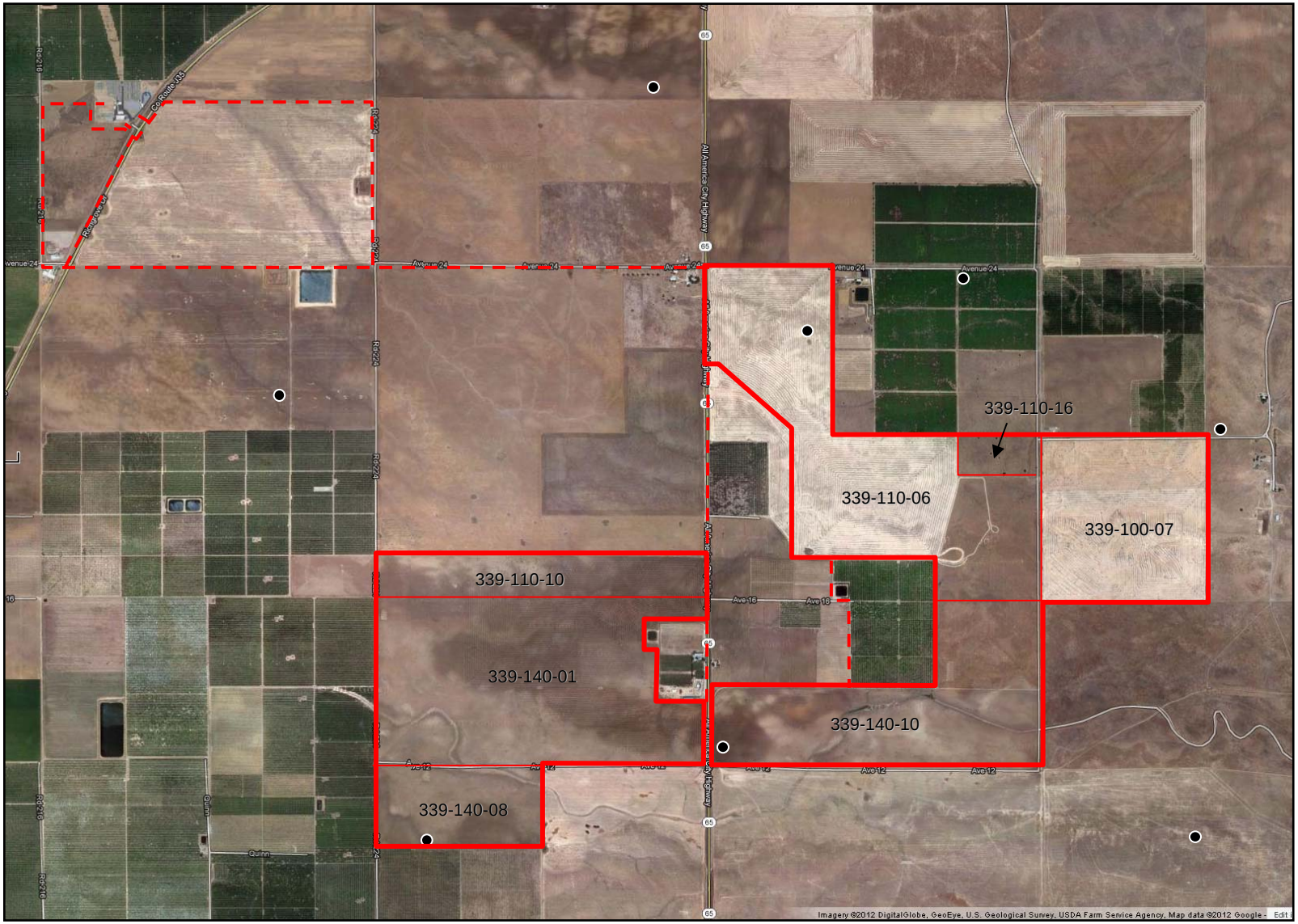
13.2 Site Plan

LEGEND

Site Boundary

Site Easements

Dry, Abandoned Oil Well



N

0 2500 5000

Approximate Scale in Feet

Advantage Environmental Consultants, LLC

145 Vallecitos De Oro, Suite 201
San Marcos, CA 92069

Phone: 760-744-3363
Fax: 760-744-3383

Site Plan
Proposed Tulare Solar Center
Tulare County, California

Work Order No.:	Report Date:	Drawn By:
12-131SD	October 2012	TJ

13.3 Site Photographs

1. View west along the southern property boundary (APN 339-140-01).

2. View south along the east portion of APN 339-140-08.

3. View west along the southern portion of APN 339-140-08.

4. View south at the intersection of Ave 12 and Road 224.

5. View north at the intersection of Ave 12 and Road 224.

6. View east at the Site intersection of Ave 12 and Road 224.

7. Discarded mattresses and a couch near the southwest corner of APN 339-140-01.

8. View east at the Site, APN 339-140-01.

9. View north along Road 224, note signage for a high pressure gas pipeline.

10. View west along the Site easement from the intersection of Ave 24 and Road 224.

11. View east at a reservoir adjacent to Site easement, southwest of intersection of Ave 24 & Rd 224.

12. View southwest at the Vestal Substation, beyond Richgrove Drive.

13. View north along proposed easement (Road 216), north of the intersection at Ave 24 and Road 216.

14. View east along proposed easement (Ave 24), near the intersection of Ave 24 and Richgrove Drive.

15. View east along the proposed northern Site easement.

16. View west along the proposed northern Site easement.

17. View east along proposed easement (Ave 24).

18. View south at the Site, east of the intersection of Hwy 65 and Ave 24.

19. View east along Ave 24, the Site's northern boundary.

20. View south at the northern portion of the Site (APN 339-110-06), from Ave 24.

21. View of the northeast adjacent property, facing south from Ave 24.

22. View east along the northern boundary of Site APN 339-110-06.

23. View south at Site APN 339-110-16.

24. View east along the northern boundary of Site APN 339-110-16.

25. View of the Site from the northern portion of APN 339-100-07.

26. View of adjacent residence located north of APN 339-100-07 and east of Road 240.

27. View south at the Site, from the northeast corner of Site APN 339-100-07.

28. View north along proposed easement, located north of APN 339-140.

29. Herd of sheep located on the northern portion of Site APN 339-140-10.

30. View north along Road 240, the eastern boundary of APN 339-140-10.

31. View west along the southern boundary of the Site (from the southeast corner of APN 339-140-10).

32. View north at the Site (from the southern boundary of APN 339-140-10).

33. View south of the southern adjacent property, from APN 339-140-10.

34. View of irrigation well located on the central adjacent property, near Hwy 65.

35. View of the central adjacent residence, located west of Hwy 65.

36. View of equipment and storage yard on the central adjacent property, located west of Hwy 65.

13.4 Title Report

OWNER'S POLICY OF TITLE INSURANCE

ISSUED BY

First American Title Insurance Company

Any notice of claim and any other notice or statement in writing required to be given to the Company under this policy must be given to the Company at the address shown in Section 18 of the Conditions.

COVERED RISKS

SUBJECT TO THE EXCLUSIONS FROM COVERAGE, THE EXCEPTIONS FROM COVERAGE CONTAINED IN SCHEDULE B AND THE CONDITIONS, FIRST AMERICAN TITLE INSURANCE COMPANY, a California corporation (the "Company") insures, as of Date of Policy and, to the extent stated in Covered Risks 9 and 10, after Date of Policy, against loss or damage, not exceeding the Amount of Insurance, sustained or incurred by the Insured by reason of:

1. Title being vested other than as stated in Schedule A.
2. Any defect in or lien or encumbrance on the Title. This Covered Risk includes but is not limited to insurance against loss from
   (a) A defect in the Title caused by
      (i) forgery, fraud, undue influence, duress, incompetency, incapacity, or impersonation;
      (ii) failure of any person or Entity to have authorized a transfer or conveyance;
      (iii) a document affecting Title not properly created, executed, witnessed, sealed, acknowledged, notarized, or delivered;
      (iv) failure to perform those acts necessary to create a document by electronic means authorized by law;
      (v) a document executed under a falsified, expired, or otherwise invalid power of attorney;
      (vi) a document not properly filed, recorded, or indexed in the Public Records including failure to perform those acts by electronic means authorized by law; or
      (vii) a defective judicial or administrative proceeding.
   (b) The lien of real estate taxes or assessments imposed on the Title by a governmental authority due or payable, but unpaid.
   (c) Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land. The term "encroachment" includes encroachments of existing improvements located on the Land onto adjoining land, and encroachments onto the Land of existing improvements located on adjoining land.
3. Unmarketable Title.
4. No right of access to and from the Land.
5. The violation or enforcement of any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
   (a) the occupancy, use, or enjoyment of the Land;
   (b) the character, dimensions, or location of any improvement erected on the Land;
   (c) the subdivision of land; or
   (d) environmental protection

   if a notice, describing any part of the Land, is recorded in the Public Records setting forth the violation or intention to enforce, but only to the extent of the violation or enforcement referred to in that notice.
6. An enforcement action based on the exercise of a governmental police power not covered by Covered Risk 5 if a notice of the enforcement action, describing any part of the Land, is recorded in the Public Records, but only to the extent of the enforcement referred to in that notice.
7. The exercise of the rights of eminent domain if a notice of the exercise, describing any part of the Land, is recorded in the Public Records.
8. Any taking by a governmental body that has occurred and is binding on the rights of a purchaser for value without Knowledge.
9. Title being vested other than as stated in Schedule A or being defective
   (a) as a result of the avoidance in whole or in part, or from a court order providing an alternative remedy, of a transfer of all or any part of the title to or any interest in the Land occurring prior to the transaction vesting Title as shown in Schedule A because that prior transfer constituted a fraudulent or preferential transfer under federal bankruptcy, state insolvency, or similar creditors' rights laws; or
   (b) because the instrument of transfer vesting Title as shown in Schedule A constitutes a preferential transfer under federal bankruptcy, state insolvency, or similar creditors' rights laws by reason of the failure of its recording in the Public Records
      (i) to be timely, or
      (ii) to impart notice of its existence to a purchaser for value or to a judgment or lien creditor.
10. Any defect in or lien or encumbrance on the Title or other matter included in Covered Risks 1 through 9 that has been created or attached or has been filed or recorded in the Public Records subsequent to Date of Policy and prior to the recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

The Company will also pay the costs, attorneys' fees, and expenses incurred in defense of any matter insured against by this policy, but only to the extent provided in the Conditions.

First American Title Insurance Company

BY PRESIDENT

ATTEST SECRETARY

FIRST AMERICAN TITLE INSURANCE COMPANY
INCORPORATED
SEPTEMBER 24, 1968
CALIFORNIA

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
   (i) the occupancy, use, or enjoyment of the Land;
   (ii) the character, dimensions, or location of any improvement erected on the Land;
   (iii) the subdivision of land; or
   (iv) environmental protection;

   or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters
   (a) created, suffered, assumed, or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risks 9 and 10); or
   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Title.
4. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction vesting the Title as shown in Schedule A, is
   (a) a fraudulent conveyance or fraudulent transfer; or
   (b) a preferential transfer for any reason not stated in Covered Risk 9 of this policy.
5. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

CONDITIONS

1. DEFINITION OF TERMS

The following terms when used in this policy mean:

(a) "Amount of Insurance": The amount stated in Schedule A, as may be increased or decreased by endorsement to this policy, increased by Section 8(b), or decreased by Sections 10 and 11 of these Conditions.
(b) "Date of Policy": The date designated as "Date of Policy" in Schedule A.
(c) "Entity": A corporation, partnership, trust, limited liability company, or other similar legal entity.
(d) "Insured": The Insured named in Schedule A.
   (i) The term "Insured" also includes
      (A) successors to the Title of the Insured by operation of law as distinguished from purchase, including heirs, devisees, survivors, personal representatives, or next of kin;
      (B) successors to an Insured by dissolution, merger, consolidation, distribution, or reorganization;
      (C) successors to an Insured by its conversion to another kind of Entity;
      (D) a grantee of an Insured under a deed delivered without payment of actual valuable consideration conveying the Title
         (1) if the stock, shares, memberships, or other equity interests of the grantee are wholly-owned by the named Insured,
         (2) if the grantee wholly owns the named Insured,
         (3) if the grantee is wholly-owned by an affiliated Entity of the named Insured, provided the affiliated Entity and the named Insured are both wholly-owned by the same person or Entity, or
         (4) if the grantee is a trustee or beneficiary of a trust created by a written instrument established by the Insured named in Schedule A for estate planning purposes.
   (ii) With regard to (A), (B), (C), and (D) reserving, however, all rights and defenses as to any successor that the Company would have had against any predecessor Insured.
(e) "Insured Claimant": An Insured claiming loss or damage.
(f) "Knowledge" or "Known": Actual knowledge, not constructive knowledge or notice that may be imputed to an Insured by reason of the Public Records or any other records that impart constructive notice of matters affecting the Title.
(g) "Land": The land described in Schedule A, and affixed improvements that by law constitute real property. The term "Land" does not include any property beyond the lines of the area described in Schedule A, nor any right, title, interest, estate, or easement in abutting streets, roads, avenues, alleys, lanes, ways, or waterways, but this does not modify or limit the extent that a right of access to and from the Land is insured by this policy.
(h) "Mortgage": Mortgage, deed of trust, trust deed, or other security instrument, including one evidenced by electronic means authorized by law.
(i) "Public Records": Records established under state statutes at Date of Policy for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without Knowledge. With respect to Covered Risk 5(d), "Public Records" shall also include environmental protection liens filed in the records of the clerk of the United States District Court for the district where the Land is located.
(j) "Title": The estate or interest described in Schedule A.
(k) "Unmarketable Title": Title affected by an alleged or apparent matter that would permit a prospective purchaser or lessee of the Title or lender on the Title to be released from the obligation to purchase, lease, or lend if there is a contractual condition requiring the delivery of marketable title.

2. CONTINUATION OF INSURANCE

The coverage of this policy shall continue in force as of Date of Policy in favor of an Insured, but only so long as the Insured retains an estate or interest in the Land, or holds an obligation secured by a purchase money Mortgage given by a purchaser from the Insured, or only so long as the Insured shall have liability by reason of warranties in any transfer or conveyance of the Title. This policy shall not continue in force in favor of any purchaser from the Insured of either (i) an estate or interest in the Land, or (ii) an obligation secured by a purchase money Mortgage given to the Insured.

3. NOTICE OF CLAIM TO BE GIVEN BY INSURED CLAIMANT

The Insured shall notify the Company promptly in writing (i) in case of any litigation as set forth in Section 5(a) of these Conditions, (ii) in case Knowledge shall come to an Insured hereunder of any claim of title or interest that is adverse to the Title, as insured, and that might cause loss or damage for which the Company may be liable by virtue of this policy, or (iii) if the Title, as insured, is rejected as Unmarketable Title. If the Company is prejudiced by the failure of the Insured Claimant to provide prompt notice, the Company's liability to the Insured Claimant under the policy shall be reduced to the extent of the prejudice.

4. PROOF OF LOSS

In the event the Company is unable to determine the amount of loss or damage, the Company may, at its option, require as a condition of payment that the Insured Claimant furnish a signed proof of loss. The proof of loss must describe the defect, lien, encumbrance, or other matter insured against by this policy that constitutes the basis of loss or damage and shall state, to the extent possible, the basis of calculating the amount of the loss or damage.

5. DEFENSE AND PROSECUTION OF ACTIONS

(a) Upon written request by the Insured, and subject to the options contained in Section 7 of these Conditions, the Company, at its own cost and without unreasonable delay, shall provide for the defense of an Insured in litigation in which any third party asserts a claim covered by this policy adverse to the Insured. This obligation is limited to only those stated causes of action alleging matters insured against by this policy. The Company shall have the right to select counsel of its choice (subject to the right of the Insured to object for reasonable cause) to represent the Insured as to those stated causes of action. It shall not be liable for and will not pay the fees of any other counsel. The Company will not pay any fees, costs, or expenses incurred by the Insured in the defense of those causes of action that allege matters not insured against by this policy.
(b) The Company shall have the right, in addition to the options contained in

Section 7 of these Conditions, at its own cost, to institute and prosecute any action or proceeding or to do any other act that in its opinion may be necessary or desirable to establish the Title, as insured, or to prevent or reduce loss or damage to the Insured. The Company may take any appropriate action under the terms of this policy, whether or not it shall be liable to the Insured. The exercise of these rights shall not be an admission of liability or waiver of any provision of this policy. If the Company exercises its rights under this subsection, it must do so diligently.

(c) Whenever the Company brings an action or asserts a defense as required or permitted by this policy, the Company may pursue the litigation to a final determination by a court of competent jurisdiction, and it expressly reserves the right, in its sole discretion, to appeal any adverse judgment or order.

6. DUTY OF INSURED CLAIMANT TO COOPERATE

(a) In all cases where this policy permits or requires the Company to prosecute or provide for the defense of any action or proceeding and any appeals, the Insured shall secure to the Company the right to so prosecute or provide defense in the action or proceeding, including the right to use, at its option, the name of the Insured for this purpose. Whenever requested by the Company, the Insured, at the Company's expense, shall give the Company all reasonable aid (i) in securing evidence, obtaining witnesses, prosecuting or defending the action or proceeding, or effecting settlement, and (ii) in any other lawful act that in the opinion of the Company may be necessary or desirable to establish the Title or any other matter as insured. If the Company is prejudiced by the failure of the Insured to furnish the required cooperation, the Company's obligations to the Insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such cooperation.

(b) The Company may reasonably require the Insured Claimant to submit to examination under oath by any authorized representative of the Company and to produce for examination, inspection, and copying, at such reasonable times and places as may be designated by the authorized representative of the Company, all records, in whatever medium maintained, including books, ledgers, checks, memoranda, correspondence, reports, e-mails, disks, tapes, and videos whether bearing a date before or after Date of Policy, that reasonably pertain to the loss or damage. Further, if requested by any authorized representative of the Company, the Insured Claimant shall grant its permission, in writing, for any authorized representative of the Company to examine, inspect, and copy all of these records in the custody or control of a third party that reasonably pertain to the loss or damage. All information designated as confidential by the Insured Claimant provided to the Company pursuant to this Section shall not be disclosed to others unless, in the reasonable judgment of the Company, it is necessary in the administration of the claim. Failure of the Insured Claimant to submit for examination under oath, produce any reasonably requested information, or grant permission to secure reasonably necessary information from third parties as required in this subsection, unless prohibited by law or governmental regulation, shall terminate any liability of the Company under this policy as to that claim.

7. OPTIONS TO PAY OR OTHERWISE SETTLE CLAIMS; TERMINATION OF LIABILITY

In case of a claim under this policy, the Company shall have the following additional options:

(a) To Pay or Tender Payment of the Amount of Insurance.

To pay or tender payment of the Amount of Insurance under this policy together with any costs, attorneys' fees, and expenses incurred by the Insured Claimant that were authorized by the Company up to the time of payment or tender of payment and that the Company is obligated to pay.

Upon the exercise by the Company of this option, all liability and obligations of the Company to the Insured under this policy, other than to make the payment required in this subsection, shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation.

(b) To Pay or Otherwise Settle With Parties Other Than the Insured or With the Insured Claimant.

(i) To pay or otherwise settle with other parties for or in the name of an Insured Claimant any claim insured against under this policy. In addition, the Company will pay any costs, attorneys' fees, and expenses incurred by the Insured Claimant that were authorized by the Company up to the time of payment and that the Company is obligated to pay; or

(ii) To pay or otherwise settle with the Insured Claimant the loss or damage provided for under this policy, together with any costs, attorneys' fees, and expenses incurred by the Insured Claimant that were authorized by the Company up to the time of payment and that the Company is obligated to pay.

Upon the exercise by the Company of either of the options provided for in subsections (b)(i) or (ii), the Company's obligations to the Insured under this policy for the claimed loss or damage, other than the payments required to be made, shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation.

8. DETERMINATION AND EXTENT OF LIABILITY

This policy is a contract of indemnity against actual monetary loss or damage sustained or incurred by the Insured Claimant who has suffered loss or damage by reason of matters insured against by this policy.

(a) The extent of liability of the Company for loss or damage under this policy shall not exceed the lesser of

(i) the Amount of Insurance; or

(ii) the difference between the value of the Title as insured and the value of the Title subject to the risk insured against by this policy.

(b) If the Company pursues its rights under Section 5 of these Conditions and is unsuccessful in establishing the Title, as insured,

(i) the Amount of Insurance shall be increased by 10%, and

(ii) the Insured Claimant shall have the right to have the loss or damage determined either as of the date the claim was made by the Insured Claimant or as of the date it is settled and paid.

(c) In addition to the extent of liability under (a) and (b), the Company will also pay those costs, attorneys' fees, and expenses incurred in accordance with Sections 5 and 7 of these Conditions.

9. LIMITATION OF LIABILITY

(a) If the Company establishes the Title, or removes the alleged defect, lien, or encumbrance, or cures the lack of a right of access to or from the Land, or cures the claim of Unmarketable Title, all as insured, in a reasonably diligent manner by any method, including litigation and the completion of any appeals, it shall have fully performed its obligations with respect to that matter and shall not be liable for any loss or damage caused to the Insured.

(b) In the event of any litigation, including litigation by the Company or with the Company's consent, the Company shall have no liability for loss or damage until there has been a final determination by a court of competent jurisdiction, and disposition of all appeals, adverse to the Title, as insured.

(c) The Company shall not be liable for loss or damage to the Insured for liability voluntarily assumed by the Insured in settling any claim or suit without the prior written consent of the Company.

10. REDUCTION OF INSURANCE; REDUCTION OR TERMINATION OF LIABILITY

All payments under this policy, except payments made for costs, attorneys' fees, and expenses, shall reduce the Amount of Insurance by the amount of the payment.

11. LIABILITY NONCUMULATIVE

The Amount of Insurance shall be reduced by any amount the Company pays under any policy insuring a Mortgage to which exception is taken in Schedule B or to which the Insured has agreed, assumed, or taken subject, or which is executed by an Insured after Date of Policy and which is a charge or lien on the Title, and the amount so paid shall be deemed a payment to the Insured under this policy.

12. PAYMENT OF LOSS

When liability and the extent of loss or damage have been definitely fixed in accordance with these Conditions, the payment shall be made within 30 days.

13. RIGHTS OF RECOVERY UPON PAYMENT OR SETTLEMENT

(a) Whenever the Company shall have settled and paid a claim under this policy, it shall be subrogated and entitled to the rights of the Insured Claimant in the Title and all other rights and remedies in respect to the claim that the Insured Claimant has against any person or property, to the extent of the amount of any loss, costs, attorneys' fees, and expenses paid by the Company. If requested by the Company, the Insured Claimant shall execute documents to evidence the transfer to the Company of these rights and remedies. The Insured Claimant shall permit the Company to sue, compromise, or settle in the name of the Insured Claimant and to use the name of the Insured Claimant in any transaction or litigation involving these rights and remedies.

If a payment on account of a claim does not fully cover the loss of the Insured Claimant, the Company shall defer the exercise of its right to recover until after the Insured Claimant shall have recovered its loss.

(b) The Company's right of subrogation includes the rights of the Insured to indemnities, guaranties, other policies of insurance, or bonds, notwithstanding any terms or conditions contained in those instruments that address subrogation rights.

14. ARBITRATION

Either the Company or the Insured may demand that the claim or controversy shall be submitted to arbitration pursuant to the Title Insurance Arbitration Rules of the American Land Title Association ("Rules"). Except as provided in the Rules, there shall be no joinder or consolidation with claims or controversies of other persons. Arbitrable matters may include, but are not limited to, any controversy or claim between the Company and the Insured arising out of or relating to this policy, any service in connection with its issuance or the breach of a policy provision, or to any other controversy or claim arising out of the transaction giving rise to this policy. All arbitrable matters when the Amount of Insurance is $2,000,000 or less shall be arbitrated at the option of either the Company or the Insured. All arbitrable matters when the Amount of Insurance is in excess of $2,000,000 shall be arbitrated only when agreed to by both the Company and the Insured. Arbitration pursuant to this policy and under the Rules shall be binding upon the parties. Judgment upon the award rendered by the Arbitrator(s) may be entered in any court of competent jurisdiction.

15. LIABILITY LIMITED TO THIS POLICY; POLICY ENTIRE CONTRACT

(a) This policy together with all endorsements, if any, attached to it by the Company is the entire policy and contract between the Insured and the Company. In interpreting any provision of this policy, this policy shall be construed as a whole.

(b) Any claim of loss or damage that arises out of the status of the Title or by any action asserting such claim shall be restricted to this policy.

(c) Any amendment of or endorsement to this policy must be in writing and authenticated by an authorized person, or expressly incorporated by Schedule A of this policy.

(d) Each endorsement to this policy issued at any time is made a part of this policy and is subject to all of its terms and provisions. Except as the endorsement expressly states, it does not (i) modify any of the terms and provisions of the policy, (ii) modify any prior endorsement, (iii) extend the Date of Policy, or (iv) increase the Amount of Insurance.

16. SEVERABILITY

In the event any provision of this policy, in whole or in part, is held invalid or unenforceable under applicable law, the policy shall be deemed not to include that provision or such part held to be invalid, but all other provisions shall remain in full force and effect.

17. CHOICE OF LAW; FORUM

(a) Choice of Law: The Insured acknowledges the Company has underwritten the risks covered by this policy and determined the premium charged therefore in reliance upon the law affecting interests in real property and applicable to the interpretation, rights, remedies, or enforcement of policies of title insurance of the jurisdiction where the Land is located.
Therefore, the court or an arbitrator shall apply the law of the jurisdiction where the Land is located to determine the validity of claims against the Title that are adverse to the Insured and to interpret and enforce the terms of this policy. In neither case shall the court or arbitrator apply its conflicts of law principles to determine the applicable law.

(b) Choice of Forum: Any litigation or other proceeding brought by the Insured against the Company must be filed only in a state or federal court within the United States of America or its territories having appropriate jurisdiction.

18. NOTICES, WHERE SENT

Any notice of claim and any other notice or statement in writing required to be given to the Company under this policy must be given to the Company at 1 First American Way, Santa Ana, CA 92707, Attn: Claims Department.

POLICY OF TITLE INSURANCE

SCHEDULE A

First American Title Insurance Company

Name and Address of Title Insurance Company:
First American Title Insurance Company
1 First American Way
Santa Ana, CA 92707

File No.: **1004-3709044**

Policy No.: **1004-3709044**

Address Reference: Vacant Land, , CA

Amount of Insurance: $745,000.00

Premium: $1,728.00

Date of Policy: March 25, 2011 at 8:00 A.M.

1. Name of Insured:

   Wellhead Renewable Energy, LLC, a Delaware limited liability company

2. The estate or interest in the Land that is insured by this policy is:

   A Fee.

3. Title is vested in:

   SI PAUL CHANGALA AND MARY LOUISE CHANGALA, TRUSTEES UNDER DECLARATION OF TRUST DATED JUNE 19, 1975

4. The Land referred to in this policy is described as follows:

   Real property in the unincorporated area of the County of Tulare, State of California, described as follows:

   PARCEL NO. 1: (APN: 339-140-009, 010)

   THE NORTH HALF OF SECTION 27, IN TOWNSHIP 24 SOUTH, RANGE 27 EAST, MOUNT DIABLO BASE AND MERIDIAN, IN THE COUNTY OF TULARE, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF.

   EXCEPTING FROM THE NORTH HALF OF SAID SECTION 27, THAT PORTION THEREOF DESCRIBED AS FOLLOWS:

   COMMENCING AT THE NORTHEAST CORNER OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 27; THENCE SOUTH 1390.4 FEET; THENCE EAST 2978.45 FEET; THENCE NORTH 1390.4 FEET TO THE NORTH LINE OF SAID SECTION 27; THENCE WEST, ALONG SAID NORTH LINE, 2978.45 FEET, MORE OR LESS, TO THE POINT OF COMMENCEMENT.

   ALSO EXCEPTING THEREFROM THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 27.

   PARCEL NO. 2: (APN: 339-140-001)

   THE NORTH HALF OF SECTION 28 IN TOWNSHIP 24 SOUTH, RANGE 27 EAST, MOUNT DIABLO BASE AND MERIDIAN, IN THE COUNTY OF TULARE, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT OF THE SURVEY OF SAID LAND ON FILE IN THE BUREAU OF LAND

MANAGEMENT AT THE DATE OF THE ISSUANCE OF THE PATENT THEREOF.

PARCEL NO. 3: (APN: 339-090-005)

THE SOUTHWEST QUARTER OF SECTION 14, TOWNSHIP 24 SOUTH, RANGE 27 EAST, MOUNT DIABLO BASE AND MERIDIAN, IN THE COUNTY OF TULARE, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF.

PARCEL NO. 4: (APN: 339-100-007)

THE SOUTHWEST QUARTER OF SECTION 23, TOWNSHIP 24 SOUTH, RANGE 27 EAST, MOUNT DIABLO BASE AND MERIDIAN, IN THE COUNTY OF TULARE, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF.

PARCEL NO. 5: INTENTIONALLY OMITTED

PARCEL NO. 6: (APN: 339-110-010)

THE SOUTH HALF OF THE SOUTH HALF OF THE SOUTH HALF OF SECTION 21, TOWNSHIP 24 SOUTH, RANGE 27 EAST, MOUNT DIABLO BASE AND MERIDIAN, IN THE COUNTY OF TULARE, STATE OF CALIFORNIA.

EXCEPTING THEREFROM THE EAST 55 FEET THEREOF, CONDEMNED FOR STATE HIGHWAY PURPOSES, BY FINAL DECREE OF CONDEMNATION ENTERED MARCH 12, 1947 IN CASE NO. 32637 SUPERIOR COURT, TULARE COUNTY, A COPY OF SAID DECREE BEING RECORDED IN BOOK 1238 PAGE 143 OF OFFICIAL RECORDS.

PARCEL NO. 7: (APN: PORTION 339-110-006)

THE WEST HALF OF LOT 9; LOTS 10 AND 19; THE WEST HALF OF LOT 21, LOT 24, EXCEPTING THE NORTH 20.15 ACRES THEREOF; ALL OF LOTS 25, 26, 38, 39 AND 40 OF G. A. HARTS SUBDIVISION NO. 1, IN THE COUNTY OF TULARE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 12, PAGE 1 OF MAPS IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL NO. 8: (APN: 339-140-08)

THE NORTH HALF OF THE SOUTHWEST QUARTER OF SECTION 28, TOWNSHIP 24 SOUTH, RANGE 27 EAST, MOUNT DIABLO BASE AND MERIDIAN, IN THE COUNTY OF TULARE, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT OF THE SURVEY OF SAID LAND ON FILE IN THE BUREAU OF LAND MANAGEMENT AT THE DATE OF THE ISSUANCE OF THE PATENT THEREOF.

PARCEL NO. 9: (APN: PORTION 339-110-006)

THE SOUTH HALF OF THE SOUTH HALF OF THE SOUTHEAST QUARTER OF SECTION 22, TOWNSHIP 24 SOUTH, RANGE 27 EAST, MOUNT DIABLO BASE AND MERIDIAN, IN THE COUNTY OF TULARE, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF.

EXCEPTING THEREFROM; THE WEST 990 FEET THEREOF.

SCHEDULE B

File No. **1004-3709044** Policy No. **1004-3709044**

EXCEPTIONS FROM COVERAGE

This Policy does not insure against loss or damage, and the Company will not pay costs, attorneys' fees, or expenses that arise by reason of:

Part One:

1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.

2. Any facts, rights, interests, or claims that are not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.

3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.

4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records.

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.

Part Two:

1. General and special taxes and assessments for the fiscal year 2011-2012, a lien not yet due or payable.

2. General and special taxes and assessments for the fiscal year 2010-2011.

First Installment:	$186.18, PAID
Penalty:	$0.00
Second Installment:	$186.18, OPEN
Penalty:	$0.00
Tax Rate Area:	074-003
A. P. No.:	339-090-005-000

(Affects Parcel 3)

3. General and special taxes and assessments for the fiscal year 2010-2011.

First Installment:	$186.18, PAID
Penalty:	$0.00
Second Installment:	$186.18, OPEN
Penalty:	$0.00
Tax Rate Area:	074-003
A. P. No.:	339-100-007-000

(Affects Parcel 4)

4. General and special taxes and assessments for the fiscal year 2010-2011.

First Installment:	$333.20, PAID
Penalty:	$0.00
Second Installment:	$333.20, OPEN
Penalty:	$0.00
Tax Rate Area:	074-003
A. P. No.:	339-110-006-000

(Affects Parcel 7 & 9)

5. Intentionally Deleted

6. General and special taxes and assessments for the fiscal year 2010-2011.

First Installment:	$92.15, PAID
Penalty:	$0.00
Second Installment:	$92.15, OPEN
Penalty:	$0.00
Tax Rate Area:	074-003
A. P. No.:	339-110-010-000

(Affects Parcel 6)

7. General and special taxes and assessments for the fiscal year 2010-2011.

First Installment:	$1,095.18, PAID
Penalty:	$0.00
Second Installment:	$1,095.18, OPEN
Penalty:	$0.00
Tax Rate Area:	074-003
A. P. No.:	339-140-001-000

(Affects Parcel 2)

8. General and special taxes and assessments for the fiscal year 2010-2011.

First Installment:	$93.07, PAID
Penalty:	$0.00
Second Installment:	$93.07, OPEN
Penalty:	$0.00
Tax Rate Area:	074-003
A. P. No.:	339-140-008-000

(Affects Parcel 8)

9. General and special taxes and assessments for the fiscal year 2010-2011.

First Installment:	$269.59, PAID
Penalty:	$0.00
Second Installment:	$269.59, OPEN
Penalty:	$0.00
Tax Rate Area:	074-003
A. P. No.:	339-140-009-000

(Affects portion of Parcel 1)

10. General and special taxes and assessments for the fiscal year 2010-2011.

First Installment:	$283.39, PAID
Penalty:	$0.00
Second Installment:	$283.39, OPEN
Penalty:	$0.00
Tax Rate Area:	074-003
A. P. No.:	339-140-010-000

(Affects portion of Parcel 1)

11. The lien of supplemental taxes, if any, assessed pursuant to Chapter 3.5 commencing with Section 75 of the California Revenue and Taxation Code.

12. Terms, provisions, covenants, restrictions and conditions contained in a document executed pursuant to the California Land Conservation Act of 1965 (Williamson Act) and recorded December 23, 1971 in Book 3004, Page 173 of Official Records.

(Affects Parcel Nos. 1, 2, 4, 6, 7 and 8)

13. Terms, provisions, covenants, restrictions and conditions contained in a document executed pursuant to the California Land Conservation Act of 1965 (Williamson Act) and recorded December 3, 1975 in Book 3283, Page 510 of Official Records.

(Affects Parcel No. 1)

14. Terms, provisions, covenants, restrictions and conditions contained in a document executed pursuant to the California Land Conservation Act of 1965 (Williamson Act) and recorded December 23, 1971 in Book 3004, Page 178 of Official Records.

(Affects Parcel No. 3)

15. Intentionally Deleted

The Following Matters Affect Parcel 1:

16. A right of way for road purposes over the North 25 feet of said Section 27 and Section 28, as granted to the County of Tulare, by deed recorded in Book 10, Page 11 of Rights of Way.

17. A right of way for poles and a pole line and incidental purposes over the Northwest quarter of said Section 27, as granted to Mt. Whitney Power and Electric Company, a corporation, by contract recorded in Book 26, Page 92 of Contracts and Prior Contract of record.

The Following Matters Affect Parcel Nos. 2, 6 and 8:

18. An easement for road purposes and incidental purposes, recorded in Book 10, Page 11 of Rights of Way.
    In Favor of: County of Tulare
    Affects: Said Land

19. An easement for road purposes and incidental purposes, recorded in Book 9, Page 318 and Book 10, Page 11, respectively of Rights of Way.
    In Favor of: County of Tulare
    Affects: Said Land

20. An easement for road purposes and incidental purposes, recorded in Book 13, Page 123 of Rights of Way.
    In Favor of: County of Tulare
    Affects: Said Land

The Following Matters Affect Parcel 3:

21. An easement for overhead and underground electrical supply and communication systems and incidental purposes, recorded January 14, 1952 in Book 1562, Page 372 of Official Records.
    In Favor of: The Southern California Edison Company
    Affects: Said Land

The Following Matters Affect Parcel 4:

22. The rights and interest in the West 25 feet of the Southwest Quarter of said Section 23 conveyed to the County of Tulare by deed dated July 29, 1909, recorded August 11, 1909 in Book 10, Pages 44 and 45 of Rights of Way, which deed contains the following provision: "To have and to hold the same unto the said County of Tulare for the use and purpose of a public highway; and if, at any time hereafter, said parcel of land shall cease to be so used as a public highway, then the same shall revert to said grantors, their heirs or assigns".

The Following Matters Affect Parcel 5:

23. Intentionally Deleted

24. Intentionally Deleted

The Following Matters Affect Parcel 7:

25. A right of way for road purposes over the East 25 feet and the South 25 feet of the South half of the South half of the Southeast Quarter of Section 22, as granted to the County of Tulare, by deed recorded in Book 10, Page 43 of Rights of Way.

26. A right of way for poles and pole lines on, over and across Lot 19, as granted to Mt. Whitney Power and Electric Company, a corporation, by contract dated April 19, 1912, recorded in Book 25 Page 40 of Contracts and Subsequent Contract.

27. A right of way for road purposes over the West 25 feet of Lots 8, 25 and 39 and over the East 25 feet of Lot 26, as granted to the County of Tulare, by deed dated December 18, 1912, recorded in Book 11 Page 270 of Rights of Way.

28. A right of way for poles and pole line, and incidental purposes, along the East side of said land in Section 21, as granted to Mt. Whitney Power and Electric Company, by deed dated April 16, 1912, recorded in Book 196, Page 492 of Deeds.

29. The terms and provisions contained in the document entitled Easement Agreement, executed by and between Si Paul Changala & Mary L. Changala, husband and wife and Kern-Tulare Water District, a California Water District, recorded May 21, 1987, as Instrument No. 32811 in Book 4577, Page 797 of Official Records.

    (Affects Parcel 7)

30. An easement for distributing electrical energy and for transmitting intelligence by electrical means and incidental purposes, recorded January 28, 1988 as Instrument No. 4308 in Book 4663, Page 413 of Official Records.
    In Favor of: Southern California Edison Company, a corporation
    Affects: Parcel 2

31. An easement for distributing electrical energy and for transmitting intelligence by electrical means and incidental purposes, recorded May 3, 1989 as Instrument No. 23551 in Book 4832, Page 185 of Official Records.
    In Favor of: Southern California Edison Company, a corporation
    Affects: Parcel 2

32. An easement for right-of-way to construct, maintain, use, operate, inspect, repair, and upgrade communications facilities/equipment including and incidental purposes, recorded March 20, 2009 as Instrument No. 16616 of Official Records.
    In Favor of: Ducor Telephone Company
    Affects: Parcel 3

33. An option dated March 17, 2011, executed by Si Paul Changala and Mary Louise Changala, Trustees under declaration of Trust dated June 19, 1975, as optionor, and Wellhead Renewable Energy, LLC, a Delaware limited liability company, as optionee, as disclosed by a Memorandum of Option, recorded March 25, 2011 as Instrument No. 2011-0017029 of Official Records.

ENDORSEMENT

Attached to Policy No. 1004-3709044

Issued By

First American Title Insurance Company

The Company hereby insures the Insured against loss or damage sustained or incurred by the Insured by reason of the option to lease referred to in paragraph 33 of Schedule B being at the date hereof invalid or the failure of the rights of the optionee under the option to be vested in the Insured. The option is shown in Schedule B Part II in its order of priority of record.

Notwithstanding the provisions contained in the conditions and stipulations of the policy of which this endorsement is a part the coverage afforded by the policy and this endorsement shall cease and terminate upon the exercise of the option or on the date the option expires by its own terms, whichever occurs first.

Part I of Schedule B of the policy is hereby amended by the addition of the following paragraph as the last numbered paragraph thereof:

> Terms, provisions and conditions, and any failure to comply with same, as contained in the Option Agreement dated March 17, 2011 by and between Si Paul Changala and Mary Louise Changala, Trustees under declaration of Trust dated June 19, 1975 as optionor and Wellhead Renewable Energy, LLC, a Delaware limited liability company as optionee as evidenced by that certain instrument which recorded on March 25, 2011 as Instrument No. 2011-0017029 of Official Records.

This endorsement is made a part of the policy and is subject to all of the terms and provisions thereof and of any prior endorsements thereto. Except to the extent expressly stated, it neither modifies any of the terms and provisions of the policy and any prior endorsements, nor does it extend the effective date of the policy and any prior endorsements, nor does it increase the face amount thereof.

F.A. Form 19 (Revised 3/99)
STANDARD COVERAGE OPTIONEE

13.5 Regulatory Database Report

TRACK ➤ INFO SERVICES, LLC

Environmental FirstSearch™ Report

Target Property:

TULARE SOLAR CENTER

TULARE COUNTY CA 93218

Job Number: 12-131SD

PREPARED FOR:

Advantage Environmental Consultants

145 Vallecitos De Oro, Suite 201

San Marcos, CA 92068

09-05-12

Tel: (866) 664-9981 *Fax: (818) 249-4227*

Environmental FirstSearch
Search Summary Report

Target Site: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

FirstSearch Summary

Database	Sel	Updated	Radius	Site	1/8	1/4	1/2	1/2>	ZIP	TOTALS
NPL	Y	07-09-12	5.00	0	0	0	0	0	0	0
NPL Delisted	Y	07-09-12	5.00	0	0	0	0	0	0	0
CERCLIS	Y	08-01-12	5.00	0	0	0	0	0	0	0
NFRAP	Y	08-01-12	5.00	0	0	0	0	0	0	0
RCRA COR ACT	Y	07-10-12	5.00	0	0	0	0	0	0	0
RCRA TSD	Y	07-10-12	5.00	0	0	0	0	0	0	0
RCRA GEN	Y	07-10-12	5.00	0	0	0	0	0	0	0
RCRA NLR	Y	07-10-12	5.00	0	0	0	0	0	0	0
Federal Brownfield	Y	07-15-12	5.00	0	0	0	0	0	0	0
ERNS	Y	07-05-12	5.00	0	0	0	0	1	0	1
Tribal Lands	Y	12-15-08	5.00	0	0	0	0	0	1	1
State/Tribal Sites	Y	02-08-12	5.00	0	0	0	0	0	0	0
State Spills 90	Y	06-06-12	5.00	0	0	0	0	0	0	0
State Spills 80	Y	NA	5.00	0	0	0	0	0	0	0
State/Tribal SWL	Y	07-09-12	5.00	0	0	0	0	2	0	2
State/Tribal LUST	Y	06-06-12	5.00	0	0	0	0	2	1	3
State/Tribal UST/AST	Y	06-01-12	5.00	0	0	0	0	5	0	5
State/Tribal EC	Y	NA	5.00	0	0	0	0	0	0	0
State/Tribal IC	Y	07-11-12	5.00	0	0	0	0	0	0	0
State/Tribal VCP	Y	08-13-12	5.00	0	0	0	0	0	0	0
State/Tribal Brownfields	Y	NA	5.00	0	0	0	0	0	0	0
Receptors	Y	01-01-05	5.00	0	0	0	0	0	0	0
NPDES	Y	08-15-12	5.00	0	0	0	0	0	0	0
FINDS	Y	05-29-09	5.00	0	0	0	0	1	3	4
TRIS	Y	01-04-12	5.00	0	0	0	0	0	0	0
HMIRS	Y	07-08-12	5.00	0	0	0	0	0	0	0
NCDB	Y	06-12-12	5.00	0	0	0	0	0	0	0
PADS	Y	10-21-11	5.00	0	0	0	0	0	0	0
AIRS	Y	08-09-12	5.00	0	0	0	0	0	0	0

Notice of Disclaimer

Due to the limitations, constraints, inaccuracies and incompleteness of government information and computer mapping data currently available to TRACK Info Services, certain conventions have been utilized in preparing the locations of all federal, state and local agency sites residing in TRACK Info Services's databases. All EPA NPL and state landfill sites are depicted by a rectangle approximating their location and size. The boundaries of the rectangles represent the eastern and western most longitudes; the northern and southern most latitudes. As such, the mapped areas may exceed the actual areas and do not represent the actual boundaries of these properties. All other sites are depicted by a point representing their approximate address location and make no attempt to represent the actual areas of the associated property. Actual boundaries and locations of individual properties can be found in the files residing at the agency responsible for such information.

Waiver of Liability

Although TRACK Info Services uses its best efforts to research the actual location of each site, TRACK Info Services does not and can not warrant the accuracy of these sites with regard to exact location and size. All authorized users of TRACK Info Services's services proceeding are signifying an understanding of TRACK Info Services's searching and mapping conventions, and agree to waive any and all liability claims associated with search and map results showing incomplete and or inaccurate site locations.

- Continued on next page -

Environmental FirstSearch
Search Summary Report

Target Site: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

FirstSearch Summary

Database	Sel	Updated	Radius	Site	1/8	1/4	1/2	1/2>	ZIP	TOTALS
DOCKET	Y	01-09-06	5.00	0	0	0	0	0	0	0
Nuclear Permits	Y	04-30-99	5.00	0	0	0	0	0	0	0
Releases	Y	07-05-12	5.00	0	0	0	0	0	1	1
Federal Other	Y	01-01-10	5.00	0	0	0	0	0	0	0
SETS PRP	Y	03-30-11	5.00	0	0	0	0	0	0	0
State Permits	Y	06-06-12	5.00	0	0	0	0	4	0	4
State Other	Y	08-13-12	5.00	0	0	0	0	0	0	0
FI Map Coverage	Y	01-26-12	0.12	0	0	-	-	-	0	0
Federal IC/EC	Y	06-13-12	5.00	0	0	0	0	0	0	0
Meth Labs	Y	02-02-12	5.00	0	0	0	0	0	0	0
HW Manifest	Y	08-02-10	5.00	0	0	0	0	3	0	3
- TOTALS -				0	0	0	0	18	6	24

Notice of Disclaimer

Due to the limitations, constraints, inaccuracies and incompleteness of government information and computer mapping data currently available to TRACK Info Services, certain conventions have been utilized in preparing the locations of all federal, state and local agency sites residing in TRACK Info Services's databases. All EPA NPL and state landfill sites are depicted by a rectangle approximating their location and size. The boundaries of the rectangles represent the eastern and western most longitudes; the northern and southern most latitudes. As such, the mapped areas may exceed the actual areas and do not represent the actual boundaries of these properties. All other sites are depicted by a point representing their approximate address location and make no attempt to represent the actual areas of the associated property. Actual boundaries and locations of individual properties can be found in the files residing at the agency responsible for such information.

Waiver of Liability

Although TRACK Info Services uses its best efforts to research the actual location of each site, TRACK Info Services does not and can not warrant the accuracy of these sites with regard to exact location and size. All authorized users of TRACK Info Services's services proceeding are signifying an understanding of TRACK Info Services's searching and mapping conventions, and agree to waive any and all liability claims associated with search and map results showing incomplete and or inaccurate site locations.

Environmental FirstSearch
Site Information Report

Request Date:	09-05-12	**Search Type:**	COORD
Requestor Name:	Dan Weis	**Job Number:**	12-131SD
Standard:	ASTM-05	**Filtered Report**	

Target Site: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

Demographics

Sites:	24	**Non-Geocoded:**	6	**Population:**	NA
Radon:	NA				

Site Location

	Degrees (Decimal)	Degrees (Min/Sec)		UTMs
Longitude:	-119.0625	-119:3:45	**Easting:**	313689.318
Latitude:	35.826944	35:49:37	**Northing:**	3966517.648
Elevation:	535		**Zone:**	11

Comment

Comment:

Additional Requests/Services

Adjacent ZIP Codes: 0 Mile(s)

ZIP Code	City Name	ST	Dist/Dir	Sel

Services:

	Requested?	Date
Fire Insurance Maps	No	
Aerial Photographs	No	
Historical Topos	No	
City Directories	No	
Title Search/Env Liens	No	
Municipal Reports	No	
Online Topos	No	

Environmental FirstSearch
Target Site Summary Report

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

TOTAL: 24 **GEOCODED:** 18 **NON GEOCODED:** 6 **SELECTED:** 0

Map ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	ElevDiff	Page No.

Environmental FirstSearch
Sites Summary Report

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

TOTAL: 24 **GEOCODED:** 18 **NON GEOCODED:** 6 **SELECTED:** 0

Map ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	ElevDiff	Page No.
1	SWL	UNIDENTIFIED FARM SWIS15-TI-1291/CLOSED	COUNTY LINE ROAD HWY 65 WOODY CA	2.24 S-	N/A	2
2	UST	SAN JOAQUIN HELICOPTERS TISID-STATE20855/ACTIVE	0 COUNTY LINE RD DELANO CA	2.54 SW	+ 40	3
3	SWL	RICHGROVE DISPOSAL SITE SWIS54-AA-0003/CLOSED	3601 ROAD 208 AT AVENUE 36 RICHGROVE CA	2.80 SW	N/A	4
4	UST	LA TAVERNA TISID-STATE49905/ACTIVE	404 RICHGROVE RICHGROVE CA 93261	3.32 SW	- 23	5
5	FINDS	FAST WAY MARKET 110041111864/FRS	188 RICHGROVE DR DELANO CA 93215	3.56 SW	- 27	5
5	UST	FASTWAY MARKET TULARE9785/DATE ISSUED 12/22/98	188 RICHGROVE DR RICHGROVE CA 93261	3.56 SW	- 27	6
5	LUST	FASTWAY MARKET T0610700206/COMPLETED - CASE CLO	188 RICHGROVE DR RICHGROVE CA 93261	3.56 SW	- 27	7
6	PERMIT	WA BURUM and SON CAL000261019/ACTIVE	19712 AVE 8 DELANO CA 93215	4.17 SW	- 67	8
7	HWMANIFEST	WA BURUM and SON CAL000261019/ACTIVE	19712 8 AVE DELANO CA 93215	4.17 SW	- 66	10
8	ERNS	UNKNOWN 222049/FIXED FACILITY	17802 ROAD 220 PORTERVILLE CA 93257	4.20 NW	- 38	12
9	UST	COMPLETE CONVENIENCE TULARE9836/DATE ISSUED 10/1/99	14314 COUNTY LINE RD DELANO CA	4.41 SW	- 53	13
10	UST	DUCOR TELEPHONE COMPANY TISID-STATE50078/ACTIVE	5582 DENNIS DUCOR CA 93218	4.49 NE	+ 9	13
11	PERMIT	KERN OIL FILTER RECYCLING CAL000327867/ACTIVE	2355 ROAD 192 DELANO CA 93215	4.54 NW	- 106	14
12	HWMANIFEST	KERN OIL FILTER RECYCLING CAL000327867/ACTIVE	2355 192 ROAD DELANO CA 93215	4.54 NW	- 106	16
13	PERMIT	PIONEER NURSERY CAL000299407/ACTIVE	2325 GARCES HWY DELANO CA 93215	4.56 SE	+ 105	17
14	LUST	EVANS GROCERY T0610700162/COMPLETED - CASE CLO	23529 AVE 56 DUCOR CA 93218	4.56 NE	+ 10	18
15	PERMIT	FARM LAND MGT SERVICE INC CAL000238457/ACTIVE	14610 AVENUE 16 DELANO CA 93215	4.74 SW	- 101	19
16	HWMANIFEST	FARM LAND MGT SERVICE INC CAL000238457/ACTIVE	14610 16 AVE DELANO CA 93215	4.74 SW	- 101	21

Environmental FirstSearch
Sites Summary Report

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

TOTAL: 24 **GEOCODED:** 18 **NON GEOCODED:** 6 **SELECTED:** 0

Map ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	ElevDiff	Page No.
	TRIBALLAND	BUREAU OF INDIAN AFFAIRS CONTA BIA-93218	UNKNOWN CA 93218	NON GC	N/A	22
	FINDS	DUCOR ELEMENTARY SD 110011552934/FRS	23761 AVENUE 56 DUCOR CA 93218	NON GC	N/A	22
	FINDS	DUCOR COLD STORAGE 110012534463/FRS	5351 ROAD 236 DUCOR CA 93218	NON GC	N/A	23
	LUST	VISTA VERDE RANCH T0610700378/COMPLETED - CASE CLO	AVENUE 2 EAST OF HWY 65 RICHGROVE CA 93218	NON GC	N/A	24
	RELEASE	CROP PRODUCTION SERVICES 335791/UNKNOWN (NRC)	1/3 MI W OF ROAD 256 ON AVE DUCOR CA 93218	NON GC	N/A	25
	FINDS	A and A TEXACO 2 110021290057/FRS	23314 AVENUE 56 DUCOR CA 93218	NON GC	N/A	26

Environmental FirstSearch
Site Detail Report

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

SWL

SEARCH ID: 4 **DIST/DIR:** 2.24 S- **ELEVATION:** **MAP ID:** 1

NAME: UNIDENTIFIED FARM
ADDRESS: COUNTY LINE ROAD HWY 65
WOODY CA
KERN
CONTACT:
SOURCE:

REV: 01/19/05
ID1: SWIS15-TI-1291
ID2:
STATUS: CLOSED
PHONE:

SITE OPERATOR INFORMATION:

SITE OPERATOR INFORMATION:

Operator:
Operator Address:
Permit Date:
Permit Status:
Land Use Name:
GIS Source for LAT and LONG: *GPS*

Operator:
Operator Address:
Permit Date:
Permit Status:
Land Use Name:
GIS Source for LAT and LONG: *GPS*

SITE ACTIVITY INFORMATION:

SITE ACTIVITY INFORMATION:

Activity: *Waste Tire Location*
Accepted Waste:
Operational Status: *Closed*
Regulatory Status *Not Currently Regulated*
Closure Date:
Closure Type:
Permitted Throughput with Units:
Permitted Capacity with Units:
Remaining Capacity with Units (landfills only):
Permitted Total Acreage: *0*
Permitted Disposal Acreage:
Last Tire Inspection Count:
Last Tire Inspection Count Date:
Original Tire Inspection Count:
Last Tire Inspection Count Date:
Inspection Frequency: *None*

Activity: *Waste Tire Location*
Accepted Waste:
Operational Status: *Closed*
Regulatory Status *Not Currently Regulated*
Closure Date:
Closure Type:
Permitted Throughput with Units:
Permitted Capacity with Units:
Remaining Capacity with Units (landfills only):
Permitted Total Acreage: *0*

- Continued on next page -

Environmental FirstSearch
Site Detail Report

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

SWL

SEARCH ID: 4 **DIST/DIR:** 2.24 S- **ELEVATION:** **MAP ID:** 1

NAME: UNIDENTIFIED FARM
ADDRESS: COUNTY LINE ROAD HWY 65
WOODY CA
KERN
CONTACT:
SOURCE:

REV: 01/19/05
ID1: SWIS15-TI-1291
ID2:
STATUS: CLOSED
PHONE:

Permitted Disposal Acreage:
Last Tire Inspection Count:
Last Tire Inspection Count Date:
Original Tire Inspection Count:
Last Tire Inspection Count Date:
Inspection Frequency: *None*

SITE OWNER INFORMATION:

SITE OWNER INFORMATION:

Environmental FirstSearch
Site Detail Report

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

UST

SEARCH ID: 13 **DIST/DIR:** 2.54 SW **ELEVATION:** 575 **MAP ID:** 2

NAME: SAN JOAQUIN HELICOPTERS
ADDRESS: 0 COUNTY LINE RD
DELANO CA
Kern
CONTACT:
SOURCE:

REV: 01/01/94
ID1: TISID-STATE20855
ID2:
STATUS: ACTIVE
PHONE:

UST HISTORICAL DATA

This site was listed in the FIDS Zip Code List as a UST site. The Office of Hazardous Data Management produced the FIDS list. The FIDS list is an index of names and locations of sites recorded in various California State environmental agency databases. It is sorted by zip code and as an index, details regarding the sites were never included.

The UST information included in FIDS as provided by the Office of Hazardous Data Management was originally collected from the SWEEPS database. The SWEEPS database recorded Underground Storage Tanks and was maintained by the State Water Resources Control Board (SWRCB). That agency no longer maintains the SWEEPS database and last updated it in 1994. The last release of that 1994 database was in 1997.

Oversight of Underground Storage Tanks within California is now conducted by Certified Unified Program Agencies referred to as CUPA s. There are approximately 102 CUPA s and Local Oversight Programs (LOP s) in the State of California. Most are city or county government agencies. As of 1998, all sites or facilities with underground storage tanks were required by Federal mandate to obtain certification by designated UST oversight agencies (in this case, CUPA s) that the UST/s at their location were upgraded or removed in adherence with the 1998 RCRA standards.

Information from the FIDS/SWEEPS lists were included in this report search to help identify where underground storage tanks may have existed that were not recorded in CUPA databases or lists collected by us. This may occur if a tank was removed prior to development of recent CUPA UST lists or never registered with a CUPA.

Environmental FirstSearch
Site Detail Report

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

SWL

SEARCH ID: 3 **DIST/DIR:** 2.80 SW **ELEVATION:** **MAP ID:** 3

NAME: RICHGROVE DISPOSAL SITE
ADDRESS: 3601 ROAD 208 AT AVENUE 36
RICHGROVE CA
TULARE
CONTACT:
SOURCE: CA IWMB

REV: 07/09/12
ID1: SWIS54-AA-0003
ID2:
STATUS: CLOSED
PHONE:

SITE OPERATOR INFORMATION:

Operator:
Operator Address:
Permit Date:
Permit Status:
Land Use Name:
GIS Source for LAT and LONG: *Map*

SITE ACTIVITY INFORMATION:

Activity: *Solid Waste Disposal Site*
Accepted Waste:
Operational Status: *Closed*
Regulatory Status *Unpermitted*
Program Type
Closure Date: *12/31/1979*
Closure Type: *Estimated*
Permitted Throughput with Units:
Permitted Capacity with Units:
Remaining Capacity with Units (landfills only):
Permitted Total Acreage: *0*
Permitted Disposal Acreage: *0*
Last Tire Inspection Count:
Last Tire Inspection Count Date:
Inspection Frequency: *Quarterly*

SITE OWNER INFORMATION:

Owner: *County Of Tulare Resource Mgt. Agency*
Owner Phone: *5597336291*
Owner Address:

Environmental FirstSearch
Site Detail Report

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

UST

SEARCH ID: 12 **DIST/DIR:** 3.32 SW **ELEVATION:** 512 **MAP ID:** 4

NAME: LA TAVERNA
ADDRESS: 404 RICHGROVE
RICHGROVE CA 93261
Tulare
CONTACT:
SOURCE:

REV: 01/01/94
ID1: TISID-STATE49905
ID2:
STATUS: ACTIVE
PHONE:

UST HISTORICAL DATA

This site was listed in the FIDS Zip Code List as a UST site. The Office of Hazardous Data Management produced the FIDS list. The FIDS list is an index of names and locations of sites recorded in various California State environmental agency databases. It is sorted by zip code and as an index, details regarding the sites were never included.

The UST information included in FIDS as provided by the Office of Hazardous Data Management was originally collected from the SWEEPS database. The SWEEPS database recorded Underground Storage Tanks and was maintained by the State Water Resources Control Board (SWRCB). That agency no longer maintains the SWEEPS database and last updated it in 1994. The last release of that 1994 database was in 1997.

Oversight of Underground Storage Tanks within California is now conducted by Certified Unified Program Agencies referred to as CUPA s. There are approximately 102 CUPA s and Local Oversight Programs (LOP s) in the State of California. Most are city or county government agencies. As of 1998, all sites or facilities with underground storage tanks were required by Federal mandate to obtain certification by designated UST oversight agencies (in this case, CUPA s) that the UST/s at their location were upgraded or removed in adherence with the 1998 RCRA standards.

Information from the FIDS/SWEEPS lists were included in this report search to help identify where underground storage tanks may have existed that were not recorded in CUPA databases or lists collected by us. This may occur if a tank was removed prior to development of recent CUPA UST lists or never registered with a CUPA.

FINDS

SEARCH ID: 2 **DIST/DIR:** 3.56 SW **ELEVATION:** 508 **MAP ID:** 5

NAME: FAST WAY MARKET
ADDRESS: 188 RICHGROVE DR
RICHGROVE CA 93261
TULARE
CONTACT:
SOURCE: EPA

REV: 10/25/11
ID1: 110041111864
ID2: 9833111
STATUS: FRS
PHONE:

FACILITY REGISTRATION INFORMATION:

PROGRAM: EIS **PROGRAM ID:** 9833111
FEDERAL FACILITY:
TRIBAL LAND:

SIC INFORMATION

NIAC INFORMATION

Environmental FirstSearch
Site Detail Report

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

UST

SEARCH ID: 11 **DIST/DIR:** 3.56 SW **ELEVATION:** 508 **MAP ID:** 5

NAME: FASTWAY MARKET
ADDRESS: 188 RICHGROVE DR
RICHGROVE CA
TULARE
CONTACT:
SOURCE:

REV: 07/26/2001
ID1: TULARE9785
ID2:
STATUS: DATE ISSUED 12/22/98
PHONE:

TULARE COUNTY TANKS LIST INFORMATION
According to the Tulare County Environmental Health Dept. the following information is current as of 07/26/01

Certificate Number: *9785*
Date Issued: *12/22/98*

Environmental FirstSearch
Site Detail Report

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

LUST

SEARCH ID: 15 **DIST/DIR:** 3.56 SW **ELEVATION:** 508 **MAP ID:** 5

NAME: FASTWAY MARKET
ADDRESS: 188 RICHGROVE DR
RICHGROVE CA 93261
TULARE
CONTACT:
SOURCE: CA SWRCB

REV: 06/06/12
ID1: T0610700206
ID2:
STATUS: COMPLETED - CASE CLOSED
PHONE:

RELEASE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

Please note that some data previously provided by the State Water Resources Control Board in the LUSTIS database is not currently being provided by the agency in the most recent edition. Incidents that occurred after the year 2000 may not have much information. Field headers with blank information following after should be interpreted as unreported by the agency.

LEAD AGENCY: *TULARE COUNTY LOP*
REGIONAL BOARD CASE NUMBER: *5T54000206*
LOCAL AGENCY: *TULARE COUNTY LOP*
LOCAL CASE NUMBER: *586*

CASE TYPE: *LUST Cleanup Site*
POTENTIAL CONTAMINANTS OF CONCERN: *Gasoline*
POTENTIAL MEDIA AFFECTED: *Soil*
STATUS: *Completed - Case Closed*
STATUS DATE: *1992-12-28 00:00:00*
SITE HISTORY (blank if not reported):

ACTION TYPE (blank if not reported): *ENFORCEMENT*
DATE (blank if not reported): *1991-05-15 00:00:00*
ACTION (blank if not reported): *Staff Letter*

ACTION TYPE (blank if not reported): *ENFORCEMENT*
DATE (blank if not reported): *1991-05-15 00:00:00*
ACTION (blank if not reported): ** Historical Enforcement*

ACTION TYPE (blank if not reported): *Other*
DATE (blank if not reported): *1950-01-01 00:00:00*
ACTION (blank if not reported): *Leak Discovery*

ACTION TYPE (blank if not reported): *Other*
DATE (blank if not reported): *1950-01-01 00:00:00*
ACTION (blank if not reported): *Leak Reported*

ACTION TYPE (blank if not reported): *Other*
DATE (blank if not reported): *1950-01-01 00:00:00*
ACTION (blank if not reported): *Leak Stopped*

Environmental FirstSearch
Site Detail Report

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

PERMIT

SEARCH ID: 8 **DIST/DIR:** 4.17 SW **ELEVATION:** 468 **MAP ID:** 6

NAME: WA BURUM and SON
ADDRESS: 19712 AVE 8
DELANO CA 93215
KERN
CONTACT:
SOURCE: CA DTSC

REV: 02/19/10
ID1: CAL000261019
ID2:
STATUS: ACTIVE
PHONE:

THE CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL HAZARDOUS WASTE MANIFEST INVENTORY (HWMI)
SITE INFORMATION FROM THE CA EPA AND DTSC HAZARDOUS WASTE TRACKING SYSTEM (HWTS) :

Date Record was Created: *10/18/2002 2:23:01 PM*
Inactivity Date:
Facility Mail Name:
Facility Mailing Address: *19712 AVE 8, DELANO, CA 93215*
Owner Name: *WA BURUM and SON LP*
Owner Address: *19712 AVE 8, DELANO, CA 93215*
Contact Name: *JEFF BURUM*
Contact Address: *19712 AVE 8, DELANO, CA 93215*
Contact Phone: *6617252884*

HWMI WASTE TYPE AND TONNAGE INFORMATION BY YEAR 1993-1999:

1999 Waste Type:
1999 Total Tonnage:
1998 Waste Type:
1998 Total Tonnage:
1997 Waste Type:
1997 Total Tonnage:
1996 Waste Type:
1996 Total Tonnage:
1995 Waste Type:
1995 Total Tonnage:
1994 Waste Type:
1994 Total Tonnage:
1993 Waste Type:
1993 Total Tonnage:

HWMI WASTE TYPE AND TONNAGE INFORMATION BY YEAR 2000-2008:

2008 Waste Type:
2008 Total Tonnage:
2007 Waste Type:
2007 Total Tonnage:
2006 Waste Type:
2006 Total Tonnage:
2005 Waste Type:
2005 Total Tonnage:
2004 Waste Type:
2004 Total Tonnage:
2003 Waste Type:
2003 Total Tonnage:
2002 Waste Type:
2002 Total Tonnage:
2001 Waste Type:
2001 Total Tonnage:
2000 Waste Type:
2000 Total Tonnage:

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

HWMANIFEST

SEARCH ID: 18 **DIST/DIR:** 4.17 SW **ELEVATION:** 469 **MAP ID:** 7

NAME: WA BURUM and SON
ADDRESS: 19712 8 AVE
DELANO CA 93215
TULARE
CONTACT:
SOURCE: CA DTSC

REV: 02/19/10
ID1: CAL000261019
ID2:
STATUS: ACTIVE
PHONE:

THE CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL HAZARDOUS WASTE MANIFEST INVENTORY (HWMI)
SITE INFORMATION FROM THE CA EPA AND DTSC HAZARDOUS WASTE TRACKING SYSTEM (HWTS) :

Date Record was Created: *10/18/2002 2:23:01 PM*
Inactivity Date:
Facility Mail Name:
Facility Mailing Address: *19712 AVE 8, DELANO, CA 93215*
Owner Name: *WA BURUM and SON LP*
Owner Address: *19712 AVE 8, DELANO, CA 93215*
Contact Name: *JEFF BURUM*
Contact Address: *19712 AVE 8, DELANO, CA 93215*
Contact Phone: *6617252884*

HWMI WASTE TYPE AND TONNAGE INFORMATION BY YEAR 2005-2009:

2009 Method Type:
2009 Waste Type:
2009 Total Tonnage:
2008 Waste Type:
2008 Total Tonnage:
2007 Waste Type:
2007 Total Tonnage:
2006 Waste Type:
2006 Total Tonnage:
2005 Waste Type:
2005 Total Tonnage:

HWMI WASTE TYPE AND TONNAGE INFORMATION BY YEAR 2000-2004:

2004 Waste Type:
2004 Total Tonnage:
2003 Waste Type:
2003 Total Tonnage:
2002 Waste Type:
2002 Total Tonnage:
2001 Waste Type:
2001 Total Tonnage:
2000 Waste Type:
2000 Total Tonnage:

HWMI WASTE TYPE AND TONNAGE INFORMATION BY YEAR 1993-1999:

1999 Waste Type:
1999 Total Tonnage:
1998 Waste Type:
1998 Total Tonnage:
1997 Waste Type:
1997 Total Tonnage:
1996 Waste Type:
1996 Total Tonnage:
1995 Waste Type:
1995 Total Tonnage:
1994 Waste Type:
1994 Total Tonnage:
1993 Waste Type:
1993 Total Tonnage:

- Continued on next page -

Environmental FirstSearch
Site Detail Report

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

HWMANIFEST

SEARCH ID: 18 **DIST/DIR:** 4.17 SW **ELEVATION:** 469 **MAP ID:** 7

NAME: WA BURUM and SON
ADDRESS: 19712 8 AVE
DELANO CA 93215
TULARE
CONTACT:
SOURCE: CA DTSC

REV: 02/19/10
ID1: CAL000261019
ID2:
STATUS: ACTIVE
PHONE:

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

ERNS

SEARCH ID: 1 **DIST/DIR:** 4.20 NW **ELEVATION:** 497 **MAP ID:** 8

NAME: UNKNOWN
ADDRESS: 17802 ROAD 220
PORTERVILLE CA 93257
Tulare
CONTACT:
SOURCE: EPA

REV: 6/2/91
ID1: 222049
ID2:
STATUS: FIXED FACILITY
PHONE:

SPILL INFORMATION
DATE OF SPILL: 6/2/1991 **TIME OF SPILL:** 1203

PRODUCT RELEASED (1): PESTICIDES, FERTILIZERS
QUANTITY (1): 0
UNITS (1): UNK

PRODUCT RELEASED (2):
QUANTITY (2):
UNITS (2):

PRODUCT RELEASED (3):
QUANTITY (3):
UNITS (3):

MEDIUM/MEDIA AFFECTED
AIR: NO **GROUNDWATER:** NO
LAND: YES **FIXED FACILITY:** NO
WATER: NO **OTHER:** NO
WATERBODY AFFECTED BY RELEASE: NONE

SPILL INFORMATION
DATE OF SPILL: 6/2/1991 **TIME OF SPILL:** 1203

PRODUCT RELEASED (1): PESTICIDES, FERTILIZERS
QUANTITY (1): 0
UNITS (1): UNK

PRODUCT RELEASED (2):
QUANTITY (2):
UNITS (2):

PRODUCT RELEASED (3):
QUANTITY (3):
UNITS (3):

MEDIUM/MEDIA AFFECTED
AIR: NO **GROUNDWATER:** NO
LAND: YES **FIXED FACILITY:** NO
WATER: NO **OTHER:** NO
WATERBODY AFFECTED BY RELEASE: NONE

CAUSE OF RELEASE
DUMPING: NO **EQUIPMENT FAILURE:** NO
NATURAL PHENOMENON: NO **OPERATOR ERROR:** NO
OTHER CAUSE: YES **TRANSP. ACCIDENT:** NO
UNKNOWN: NO

ACTIONS TAKEN: * and SOAK INTO GROUNG / CLEANUP BY RP
RELEASE DETECTION: MAT L SPILL IN BARM, WASHDOWN CAUSED CONSUMED MAT L TO FLOW OUTSIDE FI RE AREA*

- Continued on next page -

Environmental FirstSearch
Site Detail Report

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

ERNS

SEARCH ID: 1 **DIST/DIR:** 4.20 NW **ELEVATION:** 497 **MAP ID:** 8

NAME: UNKNOWN
ADDRESS: 17802 ROAD 220
PORTERVILLE CA 93257
Tulare
CONTACT:
SOURCE: EPA

REV: 6/2/91
ID1: 222049
ID2:
STATUS: FIXED FACILITY
PHONE:

MISC. NOTES: TALKED TO LARRY DEVOFSKIN OF TULARE DOH. PHASE DISESSMENT IS UNDERWAY . FIRE WAS ALLOWED TO BURN, MOST CHEMICALS BURNT OFF. CLEANUP BY RP VIA POSS PRIVATECONTRACTOR.

DISCHARGER INFORMATION
DISCHARGER ID: 222049
TYPE OF DISCHARGER:
NAME OF DISCHARGER: UNKNOWN
ADDRESS:

DUN and BRADSTREET :

CAUSE OF RELEASE

DUMPING:	NO	**EQUIPMENT FAILURE:**	NO
NATURAL PHENOMENON:	NO	**OPERATOR ERROR:**	NO
OTHER CAUSE:	YES	**TRANSP. ACCIDENT:**	NO
UNKNOWN:	NO		

ACTIONS TAKEN: * and SOAK INTO GROUNG / CLEANUP BY RP
RELEASE DETECTION: MAT L SPILL IN BARM, WASHDOWN CAUSED CONSUMED MAT L TO FLOW OUTSIDE FI RE AREA*
MISC. NOTES: TALKED TO LARRY DEVOFSKIN OF TULARE DOH. PHASE DISESSMENT IS UNDERWAY . FIRE WAS ALLOWED TO BURN, MOST CHEMICALS BURNT OFF. CLEANUP BY RP VIA POSS PRIVATECONTRACTOR.

DISCHARGER INFORMATION
DISCHARGER ID: 222049
TYPE OF DISCHARGER:
NAME OF DISCHARGER: UNKNOWN
ADDRESS:

DUN and BRADSTREET :

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

UST

SEARCH ID: 9 **DIST/DIR:** 4.41 SW **ELEVATION:** 482 **MAP ID:** 9

NAME: COMPLETE CONVENIENCE
ADDRESS: 14314 COUNTY LINE RD
DELANO CA
Kern
CONTACT:
SOURCE:

REV: 04/07/2000
ID1: TULARE9836
ID2:
STATUS: DATE ISSUED 10/1/99
PHONE:

TULARE COUNTY TANKS LIST INFORMATION
According to the Tulare County Environmental Health Dept. the following information is current as of 07/26/01

Certificate Number: *9836*
Date Issued: *10/1/99*

UST

SEARCH ID: 10 **DIST/DIR:** 4.49 NE **ELEVATION:** 544 **MAP ID:** 10

NAME: DUCOR TELEPHONE COMPANY
ADDRESS: 5582 DENNIS
DUCOR CA 93218
Tulare
CONTACT:
SOURCE:

REV: 01/01/94
ID1: TISID-STATE50078
ID2:
STATUS: ACTIVE
PHONE:

UST HISTORICAL DATA
This site was listed in the FIDS Zip Code List as a UST site. The Office of Hazardous Data Management produced the FIDS list. The FIDS list is an index of names and locations of sites recorded in various California State environmental agency databases. It is sorted by zip code and as an index, details regarding the sites were never included.
The UST information included in FIDS as provided by the Office of Hazardous Data Management was originally collected from the SWEEPS database. The SWEEPS database recorded Underground Storage Tanks and was maintained by the State Water Resources Control Board (SWRCB). That agency no longer maintains the SWEEPS database and last updated it in 1994. The last release of that 1994 database was in 1997.
Oversight of Underground Storage Tanks within California is now conducted by Certified Unified Program Agencies referred to as CUPA s. There are approximately 102 CUPA s and Local Oversight Programs (LOP s) in the State of California. Most are city or county government agencies. As of 1998, all sites or facilities with underground storage tanks were required by Federal mandate to obtain certification by designated UST oversight agencies (in this case, CUPA s) that the UST/s at their location were upgraded or removed in adherence with the 1998 RCRA standards.
Information from the FIDS/SWEEPS lists were included in this report search to help identify where underground storage tanks may have existed that were not recorded in CUPA databases or lists collected by us. This may occur if a tank was removed prior to development of recent CUPA UST lists or never registered with a CUPA.

Environmental FirstSearch
Site Detail Report

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

PERMIT

SEARCH ID: 6 **DIST/DIR:** 4.54 NW **ELEVATION:** 429 **MAP ID:** 11

NAME: KERN OIL FILTER RECYCLING
ADDRESS: 2355 ROAD 192
DELANO CA 93215
KERN
CONTACT:
SOURCE: CA DTSC

REV: 02/19/10
ID1: CAL000327867
ID2:
STATUS: ACTIVE
PHONE:

THE CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL HAZARDOUS WASTE MANIFEST INVENTORY (HWMI)
SITE INFORMATION FROM THE CA EPA AND DTSC HAZARDOUS WASTE TRACKING SYSTEM (HWTS) :

Date Record was Created: *12/13/2007 1:43:40 PM*
Inactivity Date:
Facility Mail Name:
Facility Mailing Address: *2355 ROAD 192, DELANO, CA 93215-9564*
Owner Name: *DAVID ALVAREZ*
Owner Address: *2355 ROAD 192, DELANO, CA 93215-9564*
Contact Name: *DAVID ALVAREZ*
Contact Address: *2355 ROAD 192, DELANO, CA 93215-9564*
Contact Phone: *6617218739*

HWMI WASTE TYPE AND TONNAGE INFORMATION BY YEAR 1993-1999:

1999 Waste Type:
1999 Total Tonnage:
1998 Waste Type:
1998 Total Tonnage:
1997 Waste Type:
1997 Total Tonnage:
1996 Waste Type:
1996 Total Tonnage:
1995 Waste Type:
1995 Total Tonnage:
1994 Waste Type:
1994 Total Tonnage:
1993 Waste Type:
1993 Total Tonnage:

HWMI WASTE TYPE AND TONNAGE INFORMATION BY YEAR 2000-2008:

2008 Waste Type: *Waste oil and mixed oil*
2008 Total Tonnage: *16.9556*
2007 Waste Type: *Waste oil and mixed oil*
2007 Total Tonnage: *18.70245*
2006 Waste Type:
2006 Total Tonnage:
2005 Waste Type:
2005 Total Tonnage:
2004 Waste Type:
2004 Total Tonnage:
2003 Waste Type:
2003 Total Tonnage:
2002 Waste Type:
2002 Total Tonnage:
2001 Waste Type:
2001 Total Tonnage:
2000 Waste Type:
2000 Total Tonnage:

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

HWMANIFEST

SEARCH ID: 17 **DIST/DIR:** 4.54 NW **ELEVATION:** 429 **MAP ID:** 12

NAME: KERN OIL FILTER RECYCLING
ADDRESS: 2355 192 ROAD
DELANO CA 93215
TULARE
CONTACT:
SOURCE: CA DTSC

REV: 02/19/10
ID1: CAL000327867
ID2:
STATUS: ACTIVE
PHONE:

THE CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL HAZARDOUS WASTE MANIFEST INVENTORY (HWMI)
SITE INFORMATION FROM THE CA EPA AND DTSC HAZARDOUS WASTE TRACKING SYSTEM (HWTS) :

Date Record was Created: *12/13/2007 1:43:40 PM*
Inactivity Date:
Facility Mail Name:
Facility Mailing Address: *2355 ROAD 192, DELANO, CA 93215-9564*
Owner Name: *DAVID ALVAREZ*
Owner Address: *2355 ROAD 192, DELANO, CA 93215-9564*
Contact Name: *DAVID ALVAREZ*
Contact Address: *2355 ROAD 192, DELANO, CA 93215-9564*
Contact Phone: *6617218739*

HWMI WASTE TYPE AND TONNAGE INFORMATION BY YEAR 2005-2009:

2009 Method Type: *STORAGE, BULKING, AND/OR TRANSFER OFF SITE--NO TREATMENT/REOVERY (H010-H129) OR (H131-H135)*
2009 Waste Type: *Waste oil and mixed oil*
2009 Total Tonnage: *586.4806*
2008 Waste Type: *Waste oil and mixed oil*
2008 Total Tonnage: *16.9556*
2007 Waste Type: *Waste oil and mixed oil*
2007 Total Tonnage: *18.70245*
2006 Waste Type:
2006 Total Tonnage:
2005 Waste Type:
2005 Total Tonnage:

HWMI WASTE TYPE AND TONNAGE INFORMATION BY YEAR 2000-2004:

2004 Waste Type:
2004 Total Tonnage:
2003 Waste Type:
2003 Total Tonnage:
2002 Waste Type:
2002 Total Tonnage:
2001 Waste Type:
2001 Total Tonnage:
2000 Waste Type:
2000 Total Tonnage:

HWMI WASTE TYPE AND TONNAGE INFORMATION BY YEAR 1993-1999:

1999 Waste Type:
1999 Total Tonnage:
1998 Waste Type:
1998 Total Tonnage:
1997 Waste Type:
1997 Total Tonnage:
1996 Waste Type:
1996 Total Tonnage:
1995 Waste Type:
1995 Total Tonnage:
1994 Waste Type:
1994 Total Tonnage:
1993 Waste Type:
1993 Total Tonnage:

- Continued on next page -

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

HWMANIFEST

SEARCH ID: 17 **DIST/DIR:** 4.54 NW **ELEVATION:** 429 **MAP ID:** 12

NAME: KERN OIL FILTER RECYCLING
ADDRESS: 2355 192 ROAD
DELANO CA 93215
TULARE
CONTACT:
SOURCE: CA DTSC

REV: 02/19/10
ID1: CAL000327867
ID2:
STATUS: ACTIVE
PHONE:

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

PERMIT

SEARCH ID: 7 **DIST/DIR:** 4.56 SE **ELEVATION:** 640 **MAP ID:** 13

NAME: PIONEER NURSERY
ADDRESS: 2325 GARCES HWY
DELANO CA 93215
KERN
CONTACT:
SOURCE: CA DTSC

REV: 02/19/10
ID1: CAL000299407
ID2:
STATUS: ACTIVE
PHONE:

THE CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL HAZARDOUS WASTE MANIFEST INVENTORY (HWMI)
SITE INFORMATION FROM THE CA EPA AND DTSC HAZARDOUS WASTE TRACKING SYSTEM (HWTS) :

Date Record was Created: *10/13/2005 2:47:16 PM*
Inactivity Date:
Facility Mail Name:
Facility Mailing Address: *3740 W CALDWELL, VISALIA, CA 93277*
Owner Name: *KEN PURYEAR and HP ANDERSON*
Owner Address: *3740 W CALDWELL, VISALIA, CA 93277*
Contact Name: *ANDY SCHWEIKART*
Contact Address: *2325 GARCES HWY, DELANO, CA 93215*
Contact Phone: *6613430332*

HWMI WASTE TYPE AND TONNAGE INFORMATION BY YEAR 2000-2008:

2008 Waste Type:
2008 Total Tonnage:
2007 Waste Type:
2007 Total Tonnage:
2006 Waste Type:
2006 Total Tonnage:
2005 Waste Type:
2005 Total Tonnage:
2004 Waste Type:
2004 Total Tonnage:
2003 Waste Type:
2003 Total Tonnage:
2002 Waste Type:
2002 Total Tonnage:
2001 Waste Type:
2001 Total Tonnage:
2000 Waste Type:
2000 Total Tonnage:

HWMI WASTE TYPE AND TONNAGE INFORMATION BY YEAR 1993-1999:

1999 Waste Type:
1999 Total Tonnage:
1998 Waste Type:
1998 Total Tonnage:
1997 Waste Type:
1997 Total Tonnage:
1996 Waste Type:
1996 Total Tonnage:
1995 Waste Type:
1995 Total Tonnage:
1994 Waste Type:
1994 Total Tonnage:
1993 Waste Type:
1993 Total Tonnage:

Environmental FirstSearch
Site Detail Report

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

LUST

SEARCH ID: 14 **DIST/DIR:** 4.56 NE **ELEVATION:** 545 **MAP ID:** 14

NAME: EVANS GROCERY
ADDRESS: 23529 AVE 56
DUCOR CA 93218
TULARE
CONTACT:
SOURCE: CA SWRCB

REV: 06/06/12
ID1: T0610700162
ID2:
STATUS: COMPLETED - CASE CLOSED
PHONE:

RELEASE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

Please note that some data previously provided by the State Water Resources Control Board in the LUSTIS database is not currently being provided by the agency in the most recent edition. Incidents that occurred after the year 2000 may not have much information. Field headers with blank information following after should be interpreted as unreported by the agency.

LEAD AGENCY: *TULARE COUNTY LOP*
REGIONAL BOARD CASE NUMBER: *5T54000162*
LOCAL AGENCY: *TULARE COUNTY LOP*
LOCAL CASE NUMBER: *563*

CASE TYPE: *LUST Cleanup Site*
POTENTIAL CONTAMINANTS OF CONCERN: *Gasoline*
POTENTIAL MEDIA AFFECTED: *Soil*
STATUS: *Completed - Case Closed*
STATUS DATE: *1998-03-04 00:00:00*
SITE HISTORY (blank if not reported):

ACTION TYPE (blank if not reported): *ENFORCEMENT*
DATE (blank if not reported): *1989-10-18 00:00:00*
ACTION (blank if not reported): *Staff Letter*

ACTION TYPE (blank if not reported): *ENFORCEMENT*
DATE (blank if not reported): *1989-10-18 00:00:00*
ACTION (blank if not reported): ** Historical Enforcement*

ACTION TYPE (blank if not reported): *Other*
DATE (blank if not reported): *1950-01-01 00:00:00*
ACTION (blank if not reported): *Leak Stopped*

ACTION TYPE (blank if not reported): *Other*
DATE (blank if not reported): *1950-01-01 00:00:00*
ACTION (blank if not reported): *Leak Reported*

ACTION TYPE (blank if not reported): *Other*
DATE (blank if not reported): *1950-01-01 00:00:00*
ACTION (blank if not reported): *Leak Discovery*

Environmental FirstSearch
Site Detail Report

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

PERMIT

SEARCH ID: 5 **DIST/DIR:** 4.74 SW **ELEVATION:** 434 **MAP ID:** 15

NAME: FARM LAND MGT SERVICE INC
ADDRESS: 14610 AVENUE 16
DELANO CA 93215
KERN
CONTACT:
SOURCE: CA DTSC

REV: 02/19/10
ID1: CAL000238457
ID2:
STATUS: ACTIVE
PHONE:

THE CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL HAZARDOUS WASTE MANIFEST INVENTORY (HWMI)
SITE INFORMATION FROM THE CA EPA AND DTSC HAZARDOUS WASTE TRACKING SYSTEM (HWTS) :

Date Record was Created: *2/20/2002*
Inactivity Date:
Facility Mail Name:
Facility Mailing Address: *14610 AVENUE 16, DELANO, CA 93215-0000*
Owner Name: *FARMLAND MANAGEMENT SERVICES*
Owner Address: *138 REGIS STREET SUITE A, TURLOCK, CA 95382-1108*
Contact Name: *ARNOLDO BARAJAS / MGR*
Contact Address: *14610 AVENUE 16, DELANO, CA 93215-9433*
Contact Phone: *6617210676*

HWMI WASTE TYPE AND TONNAGE INFORMATION BY YEAR 1993-1999:

1999 Waste Type:
1999 Total Tonnage:
1998 Waste Type:
1998 Total Tonnage:
1997 Waste Type:
1997 Total Tonnage:
1996 Waste Type:
1996 Total Tonnage:
1995 Waste Type:
1995 Total Tonnage:
1994 Waste Type:
1994 Total Tonnage:
1993 Waste Type:
1993 Total Tonnage:

HWMI WASTE TYPE AND TONNAGE INFORMATION BY YEAR 2000-2008:

2008 Waste Type:
2008 Total Tonnage:
2007 Waste Type:
2007 Total Tonnage:
2006 Waste Type:
2006 Total Tonnage:
2005 Waste Type:
2005 Total Tonnage:
2004 Waste Type:
2004 Total Tonnage:
2003 Waste Type:
2003 Total Tonnage:
2002 Waste Type:
2002 Total Tonnage:
2001 Waste Type:
2001 Total Tonnage:
2000 Waste Type:
2000 Total Tonnage:

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

HWMANIFEST

SEARCH ID: 16 **DIST/DIR:** 4.74 SW **ELEVATION:** 434 **MAP ID:** 16

NAME: FARM LAND MGT SERVICE INC
ADDRESS: 14610 16 AVE
DELANO CA 93215
TULARE
CONTACT:
SOURCE: CA DTSC

REV: 02/19/10
ID1: CAL000238457
ID2:
STATUS: ACTIVE
PHONE:

THE CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL HAZARDOUS WASTE MANIFEST INVENTORY (HWMI)
SITE INFORMATION FROM THE CA EPA AND DTSC HAZARDOUS WASTE TRACKING SYSTEM (HWTS) :

Date Record was Created: *2/20/2002*
Inactivity Date:
Facility Mail Name:
Facility Mailing Address: *14610 AVENUE 16, DELANO, CA 93215-0000*
Owner Name: *FARMLAND MANAGEMENT SERVICES*
Owner Address: *138 REGIS STREET SUITE A, TURLOCK, CA 95382-1108*
Contact Name: *ARNOLDO BARAJAS / MGR*
Contact Address: *14610 AVENUE 16, DELANO, CA 93215-9433*
Contact Phone: *6617210676*

HWMI WASTE TYPE AND TONNAGE INFORMATION BY YEAR 2005-2009:

2009 Method Type:
2009 Waste Type:
2009 Total Tonnage:
2008 Waste Type:
2008 Total Tonnage:
2007 Waste Type:
2007 Total Tonnage:
2006 Waste Type:
2006 Total Tonnage:
2005 Waste Type:
2005 Total Tonnage:

HWMI WASTE TYPE AND TONNAGE INFORMATION BY YEAR 2000-2004:

2004 Waste Type:
2004 Total Tonnage:
2003 Waste Type:
2003 Total Tonnage:
2002 Waste Type:
2002 Total Tonnage:
2001 Waste Type:
2001 Total Tonnage:
2000 Waste Type:
2000 Total Tonnage:

HWMI WASTE TYPE AND TONNAGE INFORMATION BY YEAR 1993-1999:

1999 Waste Type:
1999 Total Tonnage:
1998 Waste Type:
1998 Total Tonnage:
1997 Waste Type:
1997 Total Tonnage:
1996 Waste Type:
1996 Total Tonnage:
1995 Waste Type:
1995 Total Tonnage:
1994 Waste Type:
1994 Total Tonnage:
1993 Waste Type:
1993 Total Tonnage:

- Continued on next page -

Environmental FirstSearch
Site Detail Report

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

HWMANIFEST

SEARCH ID: 16 **DIST/DIR:** 4.74 SW **ELEVATION:** 434 **MAP ID:** 16

NAME: FARM LAND MGT SERVICE INC
ADDRESS: 14610 16 AVE
DELANO CA 93215
TULARE
CONTACT:
SOURCE: CA DTSC

REV: 02/19/10
ID1: CAL000238457
ID2:
STATUS: ACTIVE
PHONE:

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

TRIBALLAND

SEARCH ID: 24 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION
ADDRESS: UNKNOWN
CA 93218
TULARE
CONTACT:
SOURCE: BIA

REV: 01/15/08
ID1: BIA-93218
ID2:
STATUS:
PHONE:

BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION

OFFICE: Pacific Regional Office
CONTACT: CLAY GREGORY,REGIONAL DIRECTOR

ADDRESS: 2800 Cottage Way
Sacramento CA 95825
PHONE: Phone: 916-978-6000
FAX: Fax: 916-978-6099

The Native American Consultation Database (NACD) is a tool for identifying consultation contacts for Indian tribes, Alaska Native villages and corporations, and Native Hawaiian organizations. The database is not a comprehensive source of information, but it does provide a starting point for the consultation process by identifying tribal leaders and NAGPRA contacts. This database can be accessed online at the following web address http://home.nps.gov/nacd/

FINDS

SEARCH ID: 21 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: DUCOR ELEMENTARY SD
ADDRESS: 23761 AVENUE 56
DUCOR CA 93218
TULARE
CONTACT:
SOURCE: EPA

REV: 10/25/11
ID1: 110011552934
ID2: C09 09-C10053
STATUS: FRS
PHONE:

FACILITY REGISTRATION INFORMATION:

PROGRAM: NCDB **PROGRAM ID:** C09 09-C10053
FEDERAL FACILITY:
TRIBAL LAND:

NIAC INFORMATION

SIC INFORMATION

Environmental FirstSearch
Site Detail Report

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

FINDS

SEARCH ID: 20 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: DUCOR COLD STORAGE
ADDRESS: 5351 ROAD 236
DUCOR CA 93218
TULARE
CONTACT:
SOURCE: EPA

REV: 10/25/11
ID1: 110012534463
ID2: 100000063879
STATUS: FRS
PHONE:

FACILITY REGISTRATION INFORMATION:

PROGRAM: ICIS **PROGRAM ID:** 600029253
FEDERAL FACILITY:
TRIBAL LAND:

PROGRAM: RMP **PROGRAM ID:** 100000063879
FEDERAL FACILITY:
TRIBAL LAND:

NIAC INFORMATION

SIC INFORMATION

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

LUST

SEARCH ID: 22 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: VISTA VERDE RANCH
ADDRESS: AVENUE 2 EAST OF HWY 65
RICHGROVE CA 93218
TULARE
CONTACT:
SOURCE: CA SWRCB

REV: 06/06/12
ID1: T0610700378
ID2:
STATUS: COMPLETED - CASE CLOSED
PHONE:

RELEASE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

Please note that some data previously provided by the State Water Resources Control Board in the LUSTIS database is not currently being provided by the agency in the most recent edition. Incidents that occurred after the year 2000 may not have much information. Field headers with blank information following after should be interpreted as unreported by the agency.

LEAD AGENCY: *CENTRAL VALLEY RWQCB (REGION 5F)*
REGIONAL BOARD CASE NUMBER: *5T54000404*
LOCAL AGENCY: *TULARE COUNTY LOP*
LOCAL CASE NUMBER:

CASE TYPE: *LUST Cleanup Site*
POTENTIAL CONTAMINANTS OF CONCERN: *Gasoline*
POTENTIAL MEDIA AFFECTED: *Soil*
STATUS: *Completed - Case Closed*
STATUS DATE: *2000-06-16 00:00:00*
SITE HISTORY (blank if not reported):

ACTION TYPE (blank if not reported): *ENFORCEMENT*
DATE (blank if not reported): *2000-06-16 00:00:00*
ACTION (blank if not reported): *Closure/No Further Action Letter*

ACTION TYPE (blank if not reported): *Other*
DATE (blank if not reported): *1950-01-01 00:00:00*
ACTION (blank if not reported): *Leak Stopped*

ACTION TYPE (blank if not reported): *Other*
DATE (blank if not reported): *1950-01-01 00:00:00*
ACTION (blank if not reported): *Leak Reported*

ACTION TYPE (blank if not reported): *Other*
DATE (blank if not reported): *1950-01-01 00:00:00*
ACTION (blank if not reported): *Leak Discovery*

Environmental FirstSearch
Site Detail Report

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

RELEASE

SEARCH ID: 23 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: CROP PRODUCTION SERVICES
ADDRESS: 1/3 MI W OF ROAD 256 ON AVENUE 70
DUCOR CA 93218
Tulare
CONTACT:
SOURCE:

REV: 8/2/93
ID1: 335791
ID2:
STATUS: UNKNOWN (NRC)
PHONE:

SPILL INFORMATION

DATE OF SPILL: 8/2/93 **TIME OF SPILL:** 0800

PRODUCT RELEASED (1): SPRAY OIL
QUANTITY (1): 250
UNITS (1): GAL

PRODUCT RELEASED (2):
QUANTITY (2):
UNITS (2):

PRODUCT RELEASED (3):
QUANTITY (3):
UNITS (3):

MEDIUM/MEDIA AFFECTED

AIR: NO **GROUNDWATER:** NO
LAND: NO **FIXED FACILITY:** NO
WATER: YES **OTHER:** NO
WATERBODY AFFECTED BY RELEASE:

CAUSE OF RELEASE

DUMPING: NO **EQUIPMENT FAILURE:** NO
NATURAL PHENOMENON: NO **OPERATOR ERROR:** NO
OTHER CAUSE: NO **TRANSP. ACCIDENT:** NO
UNKNOWN: NO

ACTIONS TAKEN: CLEANUP BY CROP PROD SERVICES
RELEASE DETECTION: CROP FIELD VANDALISM TO FUEL TANK
MISC. NOTES:

DISCHARGER INFORMATION

DISCHARGER ID: 335791 **DUN and BRADSTREET :**
TYPE OF DISCHARGER: PRIVATE ENTERPRISE
NAME OF DISCHARGER: CROP PRODUCTION SERVICES
ADDRESS: UNKNOWN
DUCOR CA 93218-

Environmental FirstSearch
Site Detail Report

Target Property: TULARE SOLAR CENTER
TULARE COUNTY CA 93218

JOB: 12-131SD

FINDS

SEARCH ID: 19 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: A and A TEXACO 2
ADDRESS: 23314 AVENUE 56
DUCOR CA 93218
TULARE
CONTACT:
SOURCE: EPA

REV: 10/25/11
ID1: 110021290057
ID2: NEI2CA301033
STATUS: FRS
PHONE:

FACILITY REGISTRATION INFORMATION:

PROGRAM: EIS **PROGRAM ID:** 1462411
FEDERAL FACILITY:
TRIBAL LAND:

PROGRAM: NEI **PROGRAM ID:** NEI2CA301033
FEDERAL FACILITY:
TRIBAL LAND:

NIAC INFORMATION

SIC INFORMATION

Environmental FirstSearch Descriptions

NPL: ***EPA*** NATIONAL PRIORITY LIST - The National Priorities List is a list of the worst hazardous waste sites that have been identified by Superfund. Sites are only put on the list after they have been scored using the Hazard Ranking System (HRS), and have been subjected to public comment. Any site on the NPL is eligible for cleanup using Superfund Trust money.
A Superfund site is any land in the United States that has been contaminated by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment.
FINAL - Currently on the Final NPL
PROPOSED - Proposed for NPL

NPL DELISTED: ***EPA*** NATIONAL PRIORITY LIST Subset - Database of delisted NPL sites. 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.
DELISTED - Deleted from the Final NPL

CERCLIS: ***EPA*** COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS)- CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL.
PART OF NPL- Site is part of NPL site
DELETED - Deleted from the Final NPL
FINAL - Currently on the Final NPL
NOT PROPOSED - Not on the NPL
NOT VALID - Not Valid Site or Incident
PROPOSED - Proposed for NPL
REMOVED - Removed from Proposed NPL
SCAN PLAN - Pre-proposal Site
WITHDRAWN - Withdrawn

NFRAP: ***EPA*** COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM ARCHIVED SITES - database of Archive designated CERCLA sites that, to the best of EPA's knowledge, assessment has been completed and has determined no further steps will be taken to list this site on the National Priorities List (NPL). 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.
NFRAP – No Further Remedial Action Plan
P - Site is part of NPL site
D - Deleted from the Final NPL
F - Currently on the Final NPL
N - Not on the NPL
O - Not Valid Site or Incident
P - Proposed for NPL
R - Removed from Proposed NPL
S - Pre-proposal Site
W – Withdrawn

RCRA COR ACT: ***EPA*** RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.
RCRAInfo facilities that have reported violations and subject to corrective actions.

RCRA TSD: ***EPA*** RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM TREATMENT, STORAGE, and DISPOSAL FACILITIES. - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.
Facilities that treat, store, dispose, or incinerate hazardous waste.

RCRA GEN: ***EPA/MA DEP/CT DEP*** RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM GENERATORS - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.
Facilities that generate or transport hazardous waste or meet other RCRA requirements.
LGN - Large Quantity Generators
SGN - Small Quantity Generators
VGN – Conditionally Exempt Generator.
Included are RAATS (RCRA Administrative Action Tracking System) and CMEL (Compliance Monitoring & Enforcement List) facilities.
CONNECTICUT HAZARDOUS WASTE MANIFEST – Database of all shipments of hazardous waste within, into or from Connecticut. The data includes date of shipment, transporter and TSD info, and material shipped and quantity. This data is appended to the details of existing generator records.
MASSACHUSETTES HAZARDOUS WASTE GENERATOR – database of generators that are regulated under the MA DEP.
VQN-MA = generates less than 220 pounds or 27 gallons per month of hazardous waste or waste oil.
SQN-MA = generates 220 to 2,200 pounds or 27 to 270 gallons per month of waste oil.
LQG-MA = generates greater than 2,200 lbs of hazardous waste or waste oil per month.

RCRA NLR: ***EPA*** RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.
Facilities not currently classified by the EPA but are still included in the RCRAInfo database. Reasons for non classification:
Failure to report in a timely matter.
No longer in business.
No longer in business at the listed address.
No longer generating hazardous waste materials in quantities which require reporting.

ERNS: ***EPA/NRC*** EMERGENCY RESPONSE NOTIFICATION SYSTEM (ERNS) - Database of incidents reported to the National Response Center. These incidents include chemical spills, accidents involving chemicals (such as fires or explosions), oil spills, transportation accidents that involve oil or chemicals, releases of radioactive materials, sightings of oil sheens on bodies of water, terrorist incidents involving chemicals, incidents where illegally dumped chemicals have been found, and drills intended to prepare responders to handle these kinds of incidents. Data since January 2001 has been received from the National Response System database as the EPA no longer maintains this data.

Tribal Lands: ***DOI/BIA*** INDIAN LANDS OF THE UNITED STATES - Database of areas with boundaries established by treaty, statute, and (or) executive or court order, recognized by the Federal Government as territory in which American Indian tribes have primary governmental authority. The Indian Lands of the United States map layer shows areas of 640 acres or more, administered by the Bureau of Indian Affairs. Included are

Federally-administered lands within a reservation which may or may not be considered part of the reservation.
BUREAU OF INDIAN AFFIARS CONTACT - Regional contact information for the Bureau of Indian Affairs offices.

State/Tribal Sites: ***CA EPA*** SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), also known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances.
The SMBRPD displays information in six categories. The categories are:
1. CalSites Properties (CS)
2. School Property Evaluation Program Properties (SCH)
3. Voluntary Cleanup Program Properties (VCP)
4. Unconfirmed Properties Needing Further Evaluation (RFE)
Please Note: FirstSearch Reports list the above sites as DB Type (STATE).
5. Unconfirmed Properties Referred to Another Local or State Agency (REF)
6. Properties where a No Further Action Determination has been made (NFA)
Please Note: FirstSearch Reports list the above sites as DB Type (OTHER).
Each Category contains information on properties based upon the type of work taking place at the site. For example, the CalSites database is now one of the six categories within SMPBRD and contains only confirmed sites considered as posing the greatest threat to the public and/or the potential public school sites will be found within the School Property Evaluation Program, and those properties undergoing voluntary investigation and/or cleanup are in the Voluntary Cleanup Program.
CORTESE LIST-Pursuant to Government Code Section 65962.5, the Hazardous Waste and Substances Sites List has been compiled by Cal/EPA, Hazardous Materials Data Management Program. The CAL EPA Dept. of Toxic Substances Control compiles information from subsets of the following databases to make up the CORTESE list:
1. The Dept. of Toxic Substances Control; contaminated or potentially contaminated hazardous waste sites listed in the CAL Sites database. Formerly known as ASPIS are included (CALSITES formerly known as ASPIS).
2. The California State Water Resources Control Board; listing of Leaking Underground Storage Tanks are included (LTANK)
3. The California Integrated Waste Management Board; Sanitary Landfills which have evidence of groundwater contamination or known migration of hazardous materials (formerly WB-LF, now AB 3750).
Note: Track Info Services collects each of the above data sets individually and lists them separately in the following First Search categories in order to provide more current and comprehensive information: CALSITES: SPL, LTANK: LUST, WB-LF: SWL

State Spills 90: ***CA EPA*** SLIC REGIONS 1 - 9- The California Regional Water Quality Control Boards maintain report of sites that have records of spills, leaks, investigation, and cleanups.

State/Tribal SWL: ***CA IWMB/SWRCB/COUNTY*** SWIS SOLID WASTE INFORMATION SYSTEM-The California Integrated Waste Management Board maintains a database on solid waste facilities, operations, and disposal sites throughout the state of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites. For more information on individual sites call the number listed in the source field..
Please Note: This database contains poor site location information for many sites in the First Search reports; therefore, it may not be possible to locate or plot some sites in First Search reports.
WMUDS-The State Water Resources Control Board maintained the Waste Management Unit Database System (WMUDS). It is no longer updated. It tracked management units for several regulatory programs related to waste management and its potential impact on groundwater. Two of these programs (SWAT & TPCA) are no longer on-going regulatory programs as described below. Chapter 15 (SC15) is still an on-going regulatory program and information is updated periodically but not to the WMUDS database. The WMUDS System contains information from the following agency databases: Facility, Waste Management Unit (WMU), Waste Discharger System (WDS), SWAT, Chapter 15, TPCA, RCRA, Inspections, Violations, and Enforcement's.
Note: This database contains poor site location information for many sites in the First Search reports; therefore, it may not be possible to locate or plot some sites in First Search reports.
ORANGE COUNTY LANDFILLS LIST- A list maintained by the Orange County Health Department.

State/Tribal LUST: ***CA SWRCB/COUNTY*** LUSTIS- The State Water Resources Control Board maintains a

database of sites with confirmed or unconfirmed leaking underground storage tanks. Information for this database is collected from the states regional boards quarterly and integrated with this database.
SAN DIEGO COUNTY LEAKING TANKS- The San Diego County Department of Environmental Health maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks within its HE17/58 database. For more information on a specific file call the HazMat Duty Specialist at phone number listed in the source information field.

State/Tribal UST/AST: ***CA EPA/COUNTY/CITY*** ABOVEGROUND STORAGE TANKS LISTING-The Above Ground Petroleum Storage Act became State Law effective January 1, 1990. In general, the law requires owners or operators of AST's with petroleum products to file a storage statement and pay a fee by July 1, 1990 and every two years thereafter, take specific action to prevent spills, and in certain instances implement a groundwater monitoring program. This law does not apply to that portion of a tank facility associated with the production oil and regulated by the State Division of Oil and Gas of the Dept. of Conservation.
SWEEPS / FIDS STATE REGISTERED UNDEGROUND STORAGE TANKS- Until 1994 the State Water Resources Control Board maintained a database of registered underground storage tanks statewide referred to as the SWEEPS System. The SWEEPS UST information was integrated with the CAL EPA's Facility Index System database (FIDS) which is a master index of information from numerous California agency environmental databases. That was last updated in 1994. Track Info Services included the UST information from the FIDS database in its First Search reports for historical purposes to help its clients identify where tanks may possibly have existed. For more information on specific sites from individual paper files archived at the State Water Resources Control Board call the number listed with the source information.
INDIAN LANDS UNDERGROUND STORAGE TANKS LIST- A listing of underground storage tanks currently on Indian Lands under federal jurisdiction. California Indian Land USTS are administered by US EPA Region 9.
CUPA DATABASES & SOURCES- Definition of a CUPA: A Certified Unified Program Agency (CUPA) is a local agency that has been certified by the CAL EPA to implement six state environmental programs within the local agency's jurisdiction. These can be a county, city, or JPA (Joint Powers Authority). This program was established under the amendments to the California Health and Safety Code made by SB 1082 in 1994.
A Participating Agency (PA) is a local agency that has been designated by the local CUPA to administer one or more Unified Programs within their jurisdiction on behalf of the CUPA. A Designated Agency (DA) is an agency that has not been certified by the CUPA but is the responsible local agency that would implement the six unified programs until they are certified.
Please Note: Track Info Services, LLC collects and maintains information regarding Underground Storage Tanks from majority of the CUPAS and Participating Agencies in the State of California. These agencies typically do not maintain nor release such information on a uniform or consistent schedule; therefor, currency of the data may vary. Please look at the details on a specific site with a UST record in the First Search Report to determine the actual currency date of the record as provided by the relevant agency. Numerous efforts are made on a regular basis to obtain updated records.

State/Tribal IC: ***CA EPA*** DEED-RESTRICTED SITES LISTING- The California EPA's Department of Toxic Substances Control Board maintains a list of deed-restricted sites, properties where the DTSC has placed limits or requirements on the future use of the property due to varying levels of cleanup possible, practical or necessary at the site.

State/Tribal VCP: ***CA EPA*** SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), also known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances. The Voluntary Cleanup Program (VCP) category contains only those properties undergoing voluntary investigation and/or cleanup and which are listed in the Voluntary Cleanup Program.
Please Note: FirstSearch Reports list the above sites as DB Type VC.

Receptors: ***US DOC*** SENSITIVE RECEPTORS - 2005 Census Bureau's TIGER (Topologically Integrated Geographic Encoding and Referencing System) database of schools and hospitals. List of schools and hospitals that may house individuals deemed sensitive to environmental discharges due to their fragile immune systems.

NPDES: ***EPA*** THE NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM - Database of permitted facilities receiving and discharging effluents to and from a natural source where treatment of the

effluent is monitored.

FINDS: ***EPA*** FACILITY INDEX SYSTEM(FINDS)/FACILITY REGISTRY SYSTEM(FRS) - The index of identification numbers associated with a property or facility which the EPA has investigated or has been made aware of in conjunction with various regulatory programs. Each record indicates the EPA office that may have files on the site or facility. A Facility Registry System site has an FRS in the status field.

TRIS: ***EPA*** TOXIC RELEASE INVENTORY SYSTEM (TRIS)– Database that contains information on toxic chemical releases and other waste management activities reported annually by certain covered industry groups as well as federal facilities. This inventory was established under the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) and expanded by the Pollution Prevention Act of 1990.

HMIRS: ***US DOT*** HAZARDOUS MATERIALS INCIDENT RESPONSE SYSTEM - Database of information regarding materials, packaging, and a description of events for tracked incidents.

NCDB: ***EPA*** NATIONAL COMPLIANCE DATA BASE SYSTEM - Database of regional compliance and enforcement activity and manages the Pesticides and Toxic Substances Compliance and Enforcement program at a national level. The system tracks all compliance monitoring and enforcement activities from the time an inspector conducts and inspection until the time the inspector closes or the case settles the enforcement action. NCDB is the national repository of the 10 regional and Headquarters FIFRA/TSCA Tracking System (FTTS). Data collected in the regional FTTS is transferred to NCDB to support the need for monitoring national performance of regional programs.

PADS: ***EPA*** DATABASE OF PCB HANDLERS - Database of PolyChlorinatedBiPhenol generators, transporters, storers and/or disposers that are required to register with the EPA. This database indicates the type of handler and registration number. Also included is the PCB Transformer Registration Database.

AIRS: ***EPA*** AEROMETRIC INFORMATION RETRIEVAL SYSTEM (AIRS) – database of detailed information pertaining to sites which submit air emissions reports. Developed under the Clean Air Act, this database also maintains data on compliance status and enforcement actions.

RADON: ***NTIS*** NATIONAL RADON DATABASE - EPA radon data from 1990-1991 national radon project collected for a variety of zip codes across the United States.

DOCKET: ***EPA*** INTERGRATED COMPLIANCE INFORMATION SYSTEM (ICIS) - database of federal administrative and federal judicial cases under the following environmental statutes: the Clean Air Act (CAA), the Clean Water Act (CWA), the Resource Conservation and Recovery Act (RCRA), the Emergency Planning and Community Right-to-Know Act (EPCRA) Section 313, the Toxic Substances Control Act (TSCA), the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund), the Safe Drinking Water Act (SDWA), and the Marine Protection, Research, and Sanctuaries Act (MPRSA).

Nuclear Permits: ***EPA/NRC*** PERMITTED NUCLEAR FACILITIES - This database is a comprehensive listing of all facilities which have been issued permits for the handling of radioactive materials, in addition it also contains a complete listing of all licensed and active nuclear power plants located within the United States.
THE RADINFO DATABASE - Database of basic information about facilities that are permitted and regulated for their use and handling of radioactive materials.

Federal Other: ***EPA*** SECTION SEVEN TRACKING SYSTEM (SSTS) – database of registration and production data for facilities which manufacture pesticides.
VAPOR INTRUSION DATABASE – database that records the migration of volatile chemicals from the subsurface into overlying buildings. Volatile chemicals in contaminated soil or groundwater can emit vapors that may migrate through soil and into indoor air spaces.

SETS PRP: ***EPA*** POTENTIALLY RESPONSIBLE PARTIES (PRP) – database of parties identified by the EPA as being potential responsible for contamination at a CERCLIS or NPL site.

State Permits: ***CA EPA/COUNTY*** SAN DIEGO COUNTY HE17 PERMITS- The HE17/58 database tracks establishments issued permits and the status of their permits in relation to compliance with federal, state, and local regulations that the County oversees. It tracks if a site is a hazardous waste generator, TSD, gas station, has

underground tanks, violations, or unauthorized releases. For more information on a specific file call the HazMat Duty Specialist at the phone number listed in the source information field.
SAN BERNARDINO COUNTY HAZARDOUS MATERIALS PERMITS- Handlers and Generators Permit Information Maintained by the Hazardous Materials Division.
DEPARTMENT OF TOXIC SUBSTANCES CONTROL HAZARDOUS WASTE MANIFEST INVENTORY-Records maintained by the CA DTSC of Hazardous Waste Manifests used to track and document the transport of hazardous waste from a generator's site to the site of its final disposition.

State Other: ***US DOJ*** NATIONAL CLANDESTINE LABORATORY REGISTER - Database of 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 U.S. Department of Justice ("the Department"), and the Department has not verified the entry and does not guarantee its accuracy. All sites that are included in this data set will have an id that starts with NCLR.

State Other: ***CA EPA/COUNTY*** SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), also known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances.
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3. Voluntary Cleanup Program Properties (VCP)
4. Unconfirmed Properties Needing Further Evaluation (RFE)
Please Note: FirstSearch Reports list the above sites as DB Type (STATE).
5. Unconfirmed Properties Referred to Another Local or State Agency (REF)
6. Properties where a No Further Action Determination has been made (NFA)
Please Note: FirstSearch Reports list the above sites as DB Type (OTHER).
Each Category contains information on properties based upon the type of work taking place at the site. For example, the CalSites database is now one of the six categories within SMPBRD and contains only confirmed sites considered as posing the greatest threat to the public and/or the potential public school sites will be found within the School Property Evaluation Program, and those properties undergoing voluntary investigation and/or cleanup are in the Voluntary Cleanup Program. LA COUNTY SITE MITIGATION COMPLAINT CONTROL LOG- The County of Los Angeles Public Health Investigation Compliant Control Log.
ORANGE COUNTY INDUSTRIAL SITE CLEANUPS- List maintained by the Orange County Environmental Health Agency.
RIVERSIDE COUNTY WASTE GENERATORS-A list of facilities in Riverside County which generate hazardous waste.
SACRAMENTO COUNTY MASTER HAZMAT LIST-Master list of facilities within Sacramento County with potentially hazardous materials.
SACRAMENTO COUNTY TOXIC SITE CLEANUPS-A list of sites where unauthorized releases of potentially hazardous materials have occurred.

FI Map Coverage: ***PROPRIETARY*** FIRE INSURANCE MAP AVAILABILITY - Database of historical fire insurance map availability.

Meth Labs: ***US DOJ*** NATIONAL CLANDESTINE LABORATORY REGISTER - Database of 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 U.S. Department of Justice ("the Department"), and the Department has not verified the entry and does not guarantee its accuracy. All sites that are included in this data set will have an id that starts with NCLR.

Environmental FirstSearch Database Sources

NPL: ***EPA*** Environmental Protection Agency

Updated quarterly

NPL DELISTED: ***EPA*** Environmental Protection Agency

Updated quarterly

CERCLIS: ***EPA*** Environmental Protection Agency

Updated quarterly

NFRAP: ***EPA*** Environmental Protection Agency.

Updated quarterly

RCRA COR ACT: ***EPA*** Environmental Protection Agency.

Updated quarterly

RCRA TSD: ***EPA*** Environmental Protection Agency.

Updated quarterly

RCRA GEN: ***EPA/MA DEP/CT DEP*** Environmental Protection Agency, Massachusetts Department of Environmental Protection, Connecticut Department of Environmental Protection

Updated quarterly

RCRA NLR: ***EPA*** Environmental Protection Agency

Updated quarterly

ERNS: ***EPA/NRC*** Environmental Protection Agency

Updated annually

Tribal Lands: ***DOI/BIA*** United States Department of the Interior

Updated annually

State/Tribal Sites: ***CA EPA*** The CAL EPA, Depart. Of Toxic Substances Control
Phone: (916) 323-3400

Updated quarterly/when available

State Spills 90: ***CA EPA*** The California State Water Resources Control Board

Updated when available

State/Tribal SWL: ***CA IWMB/SWRCB/COUNTY*** The California Integrated Waste Management Board
Phone:(916) 255-2331
The State Water Resources Control Board
Phone:(916) 227-4365
Orange County Health Department

Updated quarterly/when available

State/Tribal LUST: ***CA SWRCB/COUNTY*** The California State Water Resources Control Board
Phone:(916) 227-4416
San Diego County Department of Environmental Health

Updated quarterly/when available

State/Tribal UST/AST: ***CA EPA/COUNTY/CITY*** The State Water Resources Control Board
Phone:(916) 227-4364
CAL EPA Department of Toxic Substances Control
Phone:(916)227-4404
US EPA Region 9 Underground Storage Tank Program
Phone: (415) 972-3372
ALAMEDA COUNTY CUPAS:
* County of Alameda Department of Environmental Health
* Cities of Berkeley, Fremont, Hayward, Livermore / Pleasanton, Newark, Oakland, San Leandro, Union
ALPINE COUNTY CUPA:
* Health Department (Only updated by agency sporadically)
AMADOR COUNTY CUPA:
* County of Amador Environmental Health Department
BUTTE COUNTY CUPA
* County of Butte Environmental Health Division (Only updated by agency biannually)
CALAVERAS COUNTY CUPA:
* County of Calaveras Environmental Health Department
COLUSA COUNTY CUPA:
* Environmental Health Dept.
CONTRA COSTA COUNTY CUPA:
* Hazardous Materials Program
DEL NORTE COUNTY CUPA:
* Department of Health and Social Services
EL DORADO COUNTY CUPAS:
* County of El Dorado Environmental Health - Solid Waste Div (Only updated by agency annually)
* County of El Dorado EMD Tahoe Division (Only updated by agency annually)
FRESNO COUNTY CUPA:
* Haz. Mat and Solid Waste Programs
GLENN COUNTY CUPA:
* Air Pollution Control District
HUMBOLDT COUNTY CUPA:
* Environmental Health Division
IMPERIAL COUNTY CUPA:
* Department of Planning and Building
INYO COUNTY CUPA:
* Environmental Health Department

KERN COUNTY CUPA:
* County of Kern Environmental Health Department
* City of Bakersfield Fire Department
KINGS COUNTY CUPA:
* Environmental Health Services
LAKE COUNTY CUPA:
* Division of Environmental Health
LASSEN COUNTY CUPA:
* Department of Agriculture
LOS ANGELES COUNTY CUPAS:
* County of Los Angeles Fire Department CUPA Data as maintained by the Los Angeles County Department of Public Works
* County of Los Angeles Environmental Programs Division
* Cities of Burbank, El Segundo, Glendale, Long Beach/Signal Hill, Los Angeles,Pasadena, Santa Fe Springs, Santa Monica, Torrance, Vernon
MADERA COUNTY CUPA:
* Environmental Health Department
MARIN COUNTY CUPA:
* County of Marin Office of Waste Management
* City of San Rafael Fire Department
MARIPOSA COUNTY CUPA:
* Health Department
MENDOCINO COUNTY CUPA:
* Environmental Health Department
MERCED COUNTY CUPA:
* Division of Environmental Health
MODOC COUNTY CUPA:
* Department of Agriculture
MONO COUNTY CUPA:
* Health Department
MONTEREY COUNTY CUPA:
* Environmental Health Division
NAPA COUNTY CUPA:
* Hazardous Materials Section
NEVADA COUNTY CUPA:
* Environmental Health Department
ORANGE COUNTY CUPAS:
* County of Orange Environmental Health Department
* Cities of Anaheim, Fullerton, Orange, Santa Ana
* County of Orange Environmental Health Department
PLACER COUNTY CUPAS:
* County of Placer Division of Environmental Health Field Office
* Tahoe City
* City of Roseville Roseville Fire Department
PLUMAS COUNTY CUPA:
* Environmental Health Department
RIVERSIDE COUNTY CUPA:
* Environmental Health Department
SACRAMENTO COUNTY CUPA:
* County Environmental Mgmt Dept, Haz. Mat. Div.
SAN BENITO COUNTY CUPA:
* City of Hollister Environmental Service Department
SAN BERNARDINO COUNTY CUPAS:
* County of San Bernardino Fire Department, Haz. Mat. Div.
* City of Hesperia Hesperia Fire Prevention Department
*City of Victorville Victorville Fire Department
SAN DIEGO COUNTY CUPA:
* The San Diego County Dept. of Environmental Health HE 17/58
SAN FRANCISCO COUNTY CUPA:
* Department of Public Health

SAN JOAQUIN COUNTY CUPA:
* Environmental Health Division
SAN LUIS OBISPO COUNTY CUPAS:
* County of San Luis Obispo Environmental Health Division
* City of San Luis Obispo City Fire Department
SAN MATEO COUNTY CUPA:
* Environmental Health Department
SANTA BARBARA COUNTY CUPA:
* County Fire Dept Protective Services Division
SANTA CLARA COUNTY CUPAS:
* County of Santa Clara Hazardous Materials Compliance Division
* Santa Clara County Central Fire Protection District (Covers Campbell, Cupertino, Los Gatos, & Morgan Hill)
* Cities of Gilroy, Milpitas, Mountain View, Palo Alto, San Jose Fire, Santa Clara, Sunnyvale
SANTA CRUZ COUNTY CUPA:
* Environmental Health Department
SHASTA COUNTY CUPA:
* Environmental Health Department
SIERRA COUNTY CUPA:
* Health Department
SISKIYOU COUNTY CUPA:
* Environmental Health Department
SONOMA COUNTY CUPAS:
* County of Sonoma Department Of Environmental Health
* Cities of Healdsburg / Sebastopol, Petaluma, Santa Rosa
STANISLAUS COUNTY CUPA:
* Department of Environmental Resources Haz. Mat. Division
SUTTER COUNTY CUPA:
* Department of Agriculture
TEHAMA COUNTY CUPA:
* Department of Environmental Health
TRINITY COUNTY CUPA:
* Department of Health
TULARE COUNTY CUPA:
* Environmental Health Department
TUOLUMNE COUNTY CUPA:
* Environmental Health
VENTURA COUNTY CUPAS:
* County of Ventura Environmental Health Division
* Cities of Oxnard, Ventura
YOLO COUNTY CUPA:
* Environmental Health Department
YUBA COUNTY CUPA:

Updated quarterly/annually/when available

State/Tribal IC: ***CA EPA*** The California EPA Department of Toxic Substances Control.

Updated Updated quarterly/annually/when available

State/Tribal VCP: ***CA EPA*** The California EPA Department of Toxic Substances Control.

Updated Updated quarterly/annually/when available

Receptors: ***US DOC*** US Department of Commerce, Census Bureau

Updated periodically

NPDES: ***EPA*** Environmental Protection Agency

Updated quarterly

FINDS: ***EPA*** Environmental Protection Agency

Updated annually

TRIS: ***EPA*** Environmental Protection Agency.

Updated quarterly

HMIRS: ***US DOT*** US Department of Transportation

Updated quarterly

NCDB: ***EPA*** Environmental Protection Agency

Updated quarterly

PADS: ***EPA*** Environmental Protection Agency

Updated quarterly

AIRS: ***EPA*** Environmental Protection Agency

Updated quarterly

RADON: ***NTIS*** Environmental Protection Agency, National Technical Information Services

Updated periodically

DOCKET: ***EPA*** Environmental Protection Agency

Updated when available

Nuclear Permits: ***EPA/NRC*** Nuclear Regulatory Commission

Updated periodically

Federal Other: ***EPA*** Environmental Protection Agency

Updated quarterly

SETS PRP: ***EPA*** Environmental Protection Agency, National Technical Information Services

Updated when available

State Permits: ***CA EPA/COUNTY*** The San Diego County Depart. Of Environmental Health
Phone:(619) 338-2211
San Bernardino County Fire Department
Phone:(909) 387-3080
CAL EPA, Department of Toxic Substances Control

Updated quarterly/when available

State Other: ***US DOJ*** U.S. Department of Justice

Updated when available

State Other: ***CA EPA/COUNTY*** The CAL EPA, Depart. Of Toxic Substances Control
Phone: (916) 323-3400
The Los Angeles County Hazardous Materials Division
Phone: (323) 890-7806
Orange County Environmental Health Agency
Phone: (714) 834-3536
Riverside County Department of Environmental Health, Hazardous Materials Management Division
Phone:(951) 358-5055
Sacramento County Environmental Management Department

Updated quarterly/when available

FI Map Coverage: ***PROPRIETARY*** Library of Congress
Catalogue of Maps Published by Sanborn Mapping and Geographic Information Service in February 1988®
ProQuest
Other internally produced datasets

Updated quarterly

Meth Labs: ***US DOJ*** U.S. Department of Justice

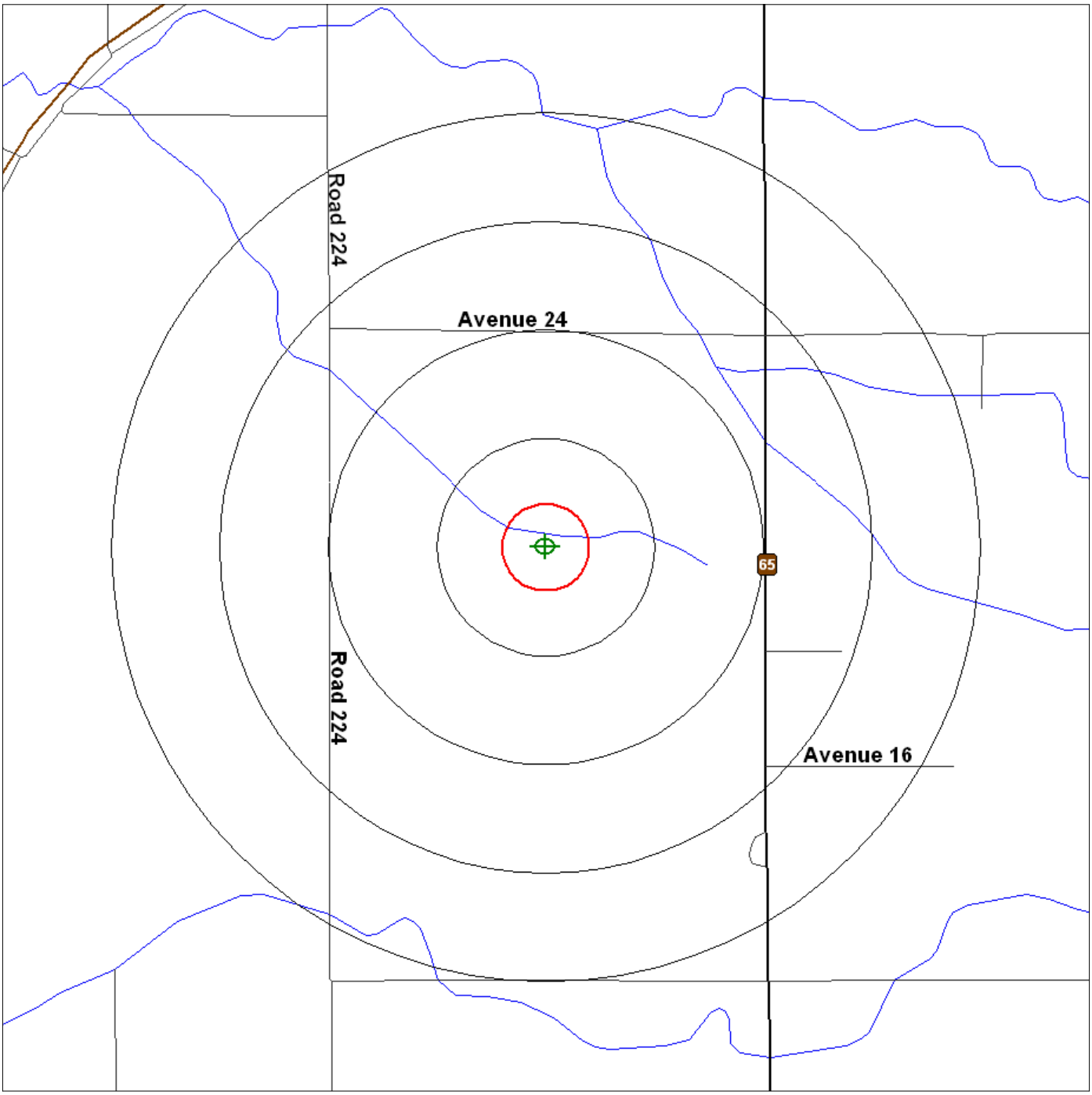
Updated when available

Environmental FirstSearch

1 Mile Radius

Single Map:

TULARE SOLAR CENTER , TULARE COUNTY CA 93218



Source: U.S. Census TIGER Files

Target Site (Latitude: 35.826944 Longitude: -119.0625) .....

Identified Site, Multiple Sites, Receptor .....

NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste

Triballand.....

Railroads .....

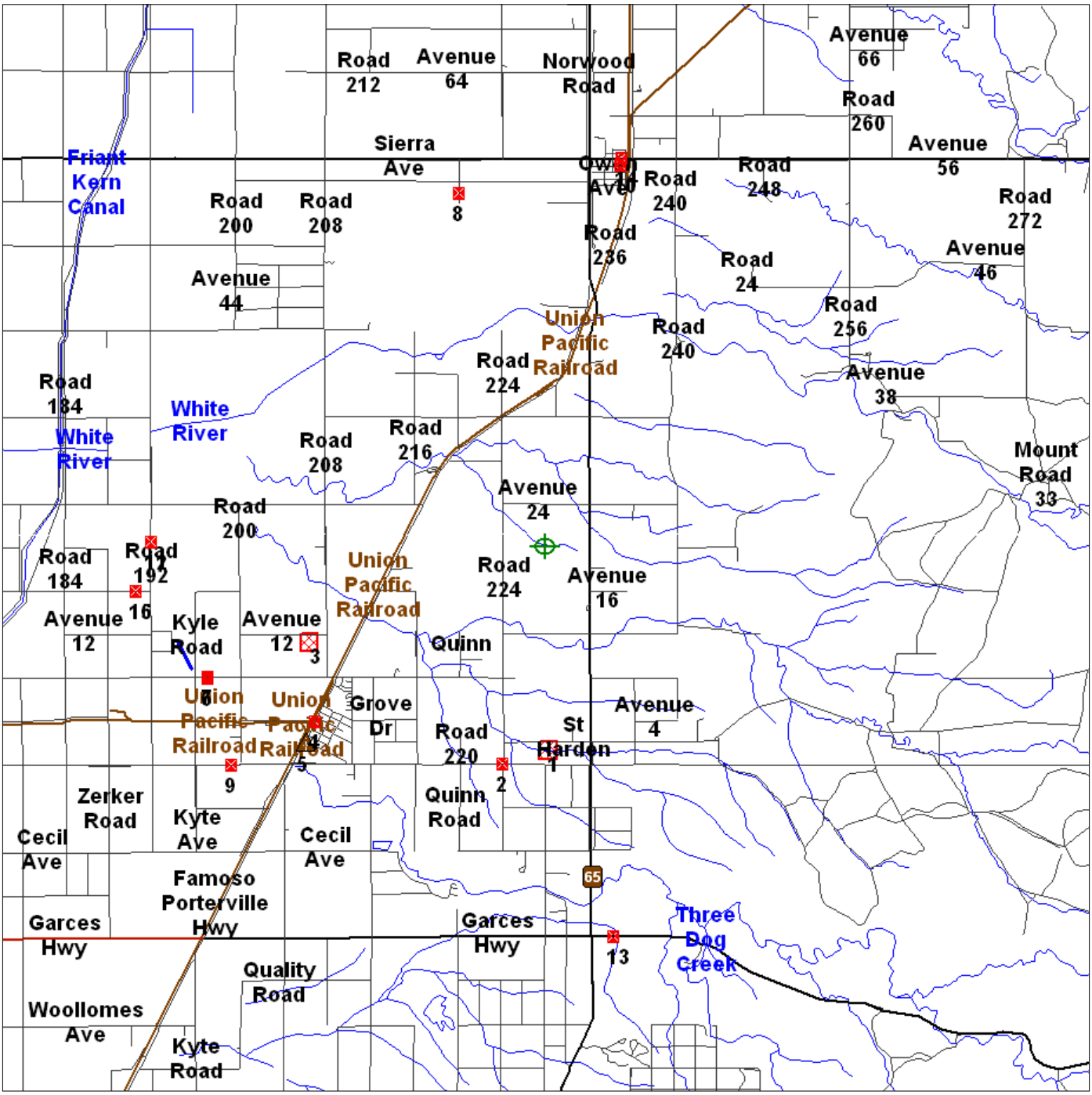
Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius

Environmental FirstSearch

5 Mile Radius

ASTM-05: Multiple Databases

TULARE SOLAR CENTER , TULARE COUNTY CA 93218



Source: U.S. Census TIGER Files

Target Site (Latitude: 35.826944 Longitude: -119.0625) .....

Identified Site, Multiple Sites, Receptor .....

NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste

Triballand.....

Railroads .....

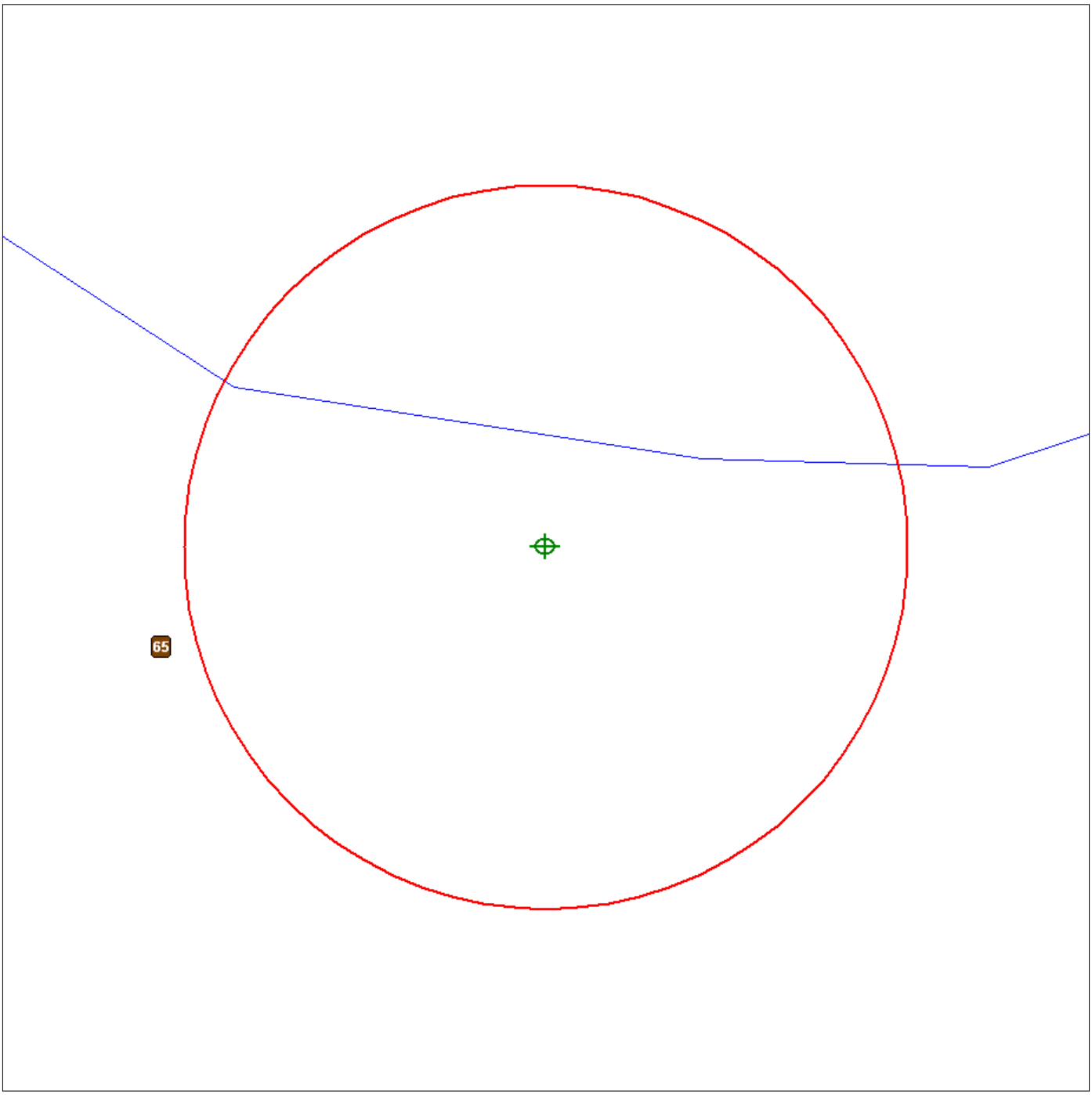
Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius

Environmental FirstSearch

.12 Mile Radius

ASTM-05: FIMAP

TULARE SOLAR CENTER , TULARE COUNTY CA 93218



Source: U.S. Census TIGER Files

Target Site (Latitude: 35.826944 Longitude: -119.0625) .....

Identified Site, Multiple Sites, Receptor .....

NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste

Triballand.....

Railroads .....

Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius

13.6 Oil and Gas Well Information

FORM 159

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS

REPORT OF WELL ABANDONMENT

Bakersfield, California

January 20, 1965

Mr. E. Beck
703 Market St., 2007 Central Tower
San Francisco, California
Agent for PACIFIC OIL AND GAS DEVELOPMENT CORPORATION

DEAR SIR:

Your report of abandonment of Well No. "Lubking" 26-28, Sec. 28, T. 24S, R. 27E, MD B. & M., -- field, Tulare County, dated December 9, 1964, has been examined in conjunction with records filed in this office.

A review of the reports and records shows that the requirements of this Division, which are based on all information filed with it, have been fulfilled.

DNS:CW
CC Co.
Conservation Committee

Bond No. 349378 dated 11-24-64

W 4-3
Dna
1-22-65

E. R. MURRAY-AARON
State Oil and Gas Supervisor

By G. G. Peirce
Deputy Supervisor

79185 1-63 6M SPO

MAP & BOOK

STATUS

Completed Producing _____
Recompleted Producing _____
Completed Abandoned _____
Uncompleted Abandoned 12-3-64
Idle _____

RECORDS

Received 1-15-65 Needed

✓ Well Summary _____
✓ History _____
✓ Log & Core _____
✓ Lge ___ Sm Elec. Log(s) ___ Lge ___ Sm
Direct. Survey _____
✓ Other S W S

7
E
121

Location _____ ✓
Elevation _____ ✓
Release Bond YES
Hold Bond ____ Reason _____
Final letter 1-20-65
150b 1-20-65
~~120~~
121 ✓
~~card~~ 148-146

Form 19

RECORDS OK
1-20-65

FORM 100

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

WELL SUMMARY REPORT

SUBMIT IN DUPLICATE

DIVISION OF OIL AND GAS
RECEIVED
JAN 15 1965
BAKERSFIELD, CALIFORNIA

Operator PACIFIC OIL & GAS DEVELOPMENT CORP. Well No. Lubking 26-28

Sec. 28, T. 24S, R. 27E, M.D. B. & M. (Richgrove Area) ~~Field~~ Tulare County.

Location 990' South and 990' East from W¼ Corner of Section
(Give location from property or section corner, or street center lines)

Elevation of ground above sea level 540 feet.

All depth measurements taken from top of Kelly Bushing which is 8 feet above ground.
(Derrick Floor, Rotary Table or Kelly Bushing)

In compliance with Sec. 3215, of the Public Resources Code, the information given herewith is a complete and correct record of the present condition of the well and all work done thereon, so far as can be determined from all available records.

Date December 9, 1964 Signed James P. George

Otto Hackel (Engineer or Geologist) Russel David (Superintendent) Title James P. George President (President, Secretary or Agent)

Commenced drilling 12-2-64

Completed drilling 12-4-64

Total depth 2688' Plugged depth

Junk

GEOLOGICAL MARKERS	DEPTH
Pyramid Hill Sand	2354'
Vedder Sand	2505'
Basement (Phyllite)	2635'

Geologic age at total depth: Sediments - lower Miocene

Commenced producing never produced (Date) Flowing/gas lift/pumping (Cross out unnecessary words)

Name of producing zone

	Clean Oil bbl. per day	Gravity Clean Oil	Per Cent Water including emulsion	Gas Mcf. per day	Tubing Pressure	Casing Pressure
Initial production						
Production after 30 days						

CASING RECORD (Present Hole)

Size of Casing (A. P. I.)	Depth of Shoe	Top of Casing	Weight of Casing	New or Second Hand	Seamless or Lapweld	Grade of Casing	Size of Hole Drilled	Number of Sacks of Cement	Depth of Cementing if through perforations
14"	20'	CONDUCTOR CEMENTED TO SURFACE							

PERFORATED CASING
(Size, top, bottom, perforated intervals, size and spacing of perforation and method.)

Was the well directionally drilled? No Electrical Log Depths 100' to 2683' (Attach Copy of Log)

78922 1-63 15M △ SPO

FORM 103

SUBMIT IN DUPLICATE

STATE OF CALIFORNIA

DEPARTMENT OF CONSERVATION

90715 6-63 25M △ SPO

DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
JAN 15 1965
BAKERSFIELD, CALIFORNIA

History of Oil or Gas Well

OPERATOR PACIFIC OIL & GAS DEV. CORP. FIELD Richgrove Area

Well No. Lubking 26-28, Sec. 28, T. 24S, R. 27E, M.D. B. & M.

Date December 9, 19 64 Signed James P. George

James P. George

703 Market Street
San Francisco DO 2-0583 Title President

(Address) (Telephone Number) (President, Secretary or Agent)

It is of the greatest importance to have a complete history of the well. Use this form to report a full account of all important operations during the drilling and testing of the well or during re-drilling, altering of casing, plugging, or abandonment with the dates thereof. Be sure to include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests, shooting and initial production data.

Date	
11-29-64	Graded access road and location. Dug sump and set 14" conductor at 20' cemented to surface.
12 -1-64	Moved in and rigged up Bakersfield Drilling Company Rig #2.
12- 2-64	Spudded at 2:30 AM and drilled 9 7/8" hole to 1706'.
12- 3-64	Drilled 9 7/8" hole to 2532 feet.
12- 4-64	Drilled 9 7/8" hole to 2688 feet. Ran Welex I.E.S. log and took 14 Sidewall samples.
12 -5-64	Bridged conductor pipe at 20' and cemented to surface. Placing of cement witnessed by D.O.G. Well abandoned.

FORM 101
27531-705 7-64 5M ⓑ OSP

SUBMIT IN DUPLICATE

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
JAN 15 1965
BAKERSFIELD, CALIFORNIA

LOG AND CORE RECORD OF OIL OR GAS WELL

Operator PACIFIC OIL & GAS DEV. CORP. ~~XXX~~ Field Richgrove Area

Well No. Lubking 26-28 Sec. 28, T. 24S, R. 27E, M.D.B. & M.

FORMATIONS PENETRATED BY WELL

DEPTH TO Top of Formation	DEPTH TO Bottom of Formation	Thickness	Drilled or Cored	Recovery	DESCRIPTION
0'	1500'	1500'	Drilled		Clay and sand - samples appear non-marine.
1500'	1850'	350'	Drilled		Sand with streaks of brown siltstone - marine.
1850'	2500'	650'	Drilled		Very fine sand with streaks of brown siltstone.
2500'	2640'	140'	Drilled		Sand.
2640'	2688'	48'	Drilled		Basement rock (Phyllite)

WELEX SIDEWALL SAMPLES

Depth	Recovery	Description
2205'	1½"	Silty sand, dark brownish gray, very fine grained to silty, well sorted, massive firm but friable, low permeability, noted one fish scale and some carbonaceous fragments.
2236'	1 3/4"	Silty sand, very similar to sample @ 2205' but somewhat lighter gray and slightly more permeable.
2275'	1½"	Silty sand, as sample at 2236', firm but easily fraible, well sorted, permeability hampered by being very fine grained, noted one large poorly preserved megafossil shell lying parallel to long axis of sample indicating very low dip.
2365'	1½"	Silty sand, very similar to sample at 2205', dark brownish gray, very fine grained to silty, well sorted, massive, firm but easily friable, low permeability.
2405	1"	Silty sand, as sample at 2365'.
		Note: Samples 2205' to 2405' typical Jewett or Pyramid Hill Sand lithology.
2515'	½"	Sand, blue gray, medium to coarse grained, fair sorting, massive, easily friable to loose, clean, very porous and permeable. Note: Typical Vedder type sand.

FORM 101
27531-705 7-64 5M ② OSP

SUBMIT IN DUPLICATE

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
JAN 1 6 1965
BAKERSFIELD, CALIFORNIA

LOG AND CORE RECORD OF OIL OR GAS WELL

Operator PACIFIC OIL & GAS DEV. CORP. ~~Field~~ Richgrove Area

Well No. Lubking 26-28 Sec. 28, T. 24S, R. 27E, M.D. B. & M.

FORMATIONS PENETRATED BY WELL

DEPTH TO Top of Formation	DEPTH TO Bottom of Formation	Thickness	Drilled or Cored	Recovery	DESCRIPTION

WELEX SIDEWALL SAMPLES (continued)

Depth	Recovery	Description
2533'	1½"	Sand, blue gray, medium grained, well sorted, clean, easily friable, very porous and permeable.
2550'	1½"	Sand, very similar to sample at 2533'.
2568'	1 3/4"	Sand, similar to samples at 2533' and 2550' but may be somewhat coarser, very porous and permeable.
2604'	1½"	Sand, very similar to samples at 2533' and 2550'.
2618'	1½"	Sand, dark bluish gray, fine grained, well sorted, massive, fairly clean, easily friable, fair permeability but hampered by fine grain size. Note: Appears to be marine environment deposited sand.
2648'	½"	Phyllite (Metamorphic basement rock), black, fairly fresh but partially weathered as fragments vary from crumbly to very hard, occasionally very finely micaceous along schistose or slaty cleavage.
2658'	1"	Phyllite, as sample at 2648', fragments harder and fresher.
2674'	1½"	Phyllite or Schist, similar to samples at 2648' and 2658' but cleavage not as well developed, locally with greenish cast, occasional slickensided fracture planes.

Described by: Otto Hackel

FORM 109-D

CALIFORNIA RESOURCES AGENCY
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

Special Report on Operations Witnessed

No. T B 464-522

Mr. E. Beck
703 Market Street
San Francisco, Calif. 94103

Bakersfield, Calif.
December 11, 1964

Agent for PACIFIC OIL AND GAS DEVELOPMENT CORP.

DEAR SIR:

Operations at well No. "Lubking" 26-28, Sec. 28, T. 24S, R. 27E, MD B & M. Field, in Tulare County, were witnessed on Dec. 5, 1964. Mr. J. R. Weddle, representative of the supervisor was present from 2:00 P.M. to 2:45 P.M. There were also present R. David, Drilling Foreman and C. Sutton, Driller

Present condition of well: 14" cem. 20'; T. D. 2688', plugged with cement 25' - SURF.

The operations were performed for the purpose of plugging the hole in the process of abandonment.

Mr. David reported:

1. A 9 5/8" hole was drilled from 20' to 2688'.

2. A bridge was placed in the 9 5/8" hole at 25'.

The Engineer noted that sufficient readymix concrete was dumped into the hole at 25' to fill to the surface.

THE PLACING AND LOCATION OF THE SURFACE PLUG ARE APPROVED.

JRW:GS
cc-Co.

E. R. MURRAY-AARON
State Oil and Gas Supervisor

By G. G. Peirce Deputy

86313 4-63 15M ② SPO

FORM 111

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

REPORT ON PROPOSED OPERATIONS No. P B 464-766

Mr. E. Beck
703 Market Street
San Francisco, Calif. 94103

Bakersfield, Calif.
December 8, 1964

Agent for PACIFIC OIL AND GAS DEVELOPMENT CORP.

DEAR SIR:

Your proposal to abandon Well No. "Lubking" 26-28, Section 28, T. 24S, R. 27E, MD B. & M., - Field, Tulare County, dated Dec. 4, 1964, received Dec. 8, 1964, has been examined in conjunction with records filed in this office. Present conditions as shown by the records and the proposal are as follows:

THE NOTICE STATES:

THE PRESENT CONDITION OF THE WELL IS:

1. Total Depth: 2688'
2. Complete casing record, including plugs: 14" Conductor at 20'
3. Last Produced Never produced
4. Oil or Gas showings and results of tests: None
5. Stratigraphic markers and depths: Pyramid Hill Sand 2354'
   Vedder Sand 2505'
   Basement 2635'
6. Formation at bottom: Basement
7. Base of fresh water sands: Sands carry fresh water from surface to basement.

PROPOSAL:

THE PROPOSED WORK IS

Bridge the base of the conductor at 20' and fill conductor to surface with cement.

Notify D.O.G. to witness placing of the cement.

DECISION:

THE PROPOSAL IS APPROVED PROVIDED THAT:

1. The hole shall be filled with drilling fluid to 25' below the surface.

2. The surface plug shall extend for at least 25 lineal feet.

AGH:GS
cc-Co.
Bond No. 349378, Dated 11-24-64

E. R. MURRAY-AARON, State Oil and Gas Supervisor

By [signature], Deputy

18755-705 3-64 50M ⓘT OSP

FORM 108. 96189 9-63 10M ② SPO

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
DEC 8 1964
BAKERSFIELD, CALIFORNIA

Notice of Intention to Abandon Well

This notice must be given at least five days before work is to begin; one copy only

Bakersfield Calif. December 4 1964

DIVISION OF OIL AND GAS

In compliance with Division 3, Public Resources Code, notice is hereby given that it is our intention to abandon

Well No. Lubking 26-28, Sec. 28, T. 24S,

R. 27E, M.D.B. & M., Richgrove Area Field, Tulare County,

commencing work on December 5 1964.

THE PRESENT CONDITION OF THE WELL IS:

1. Total Depth: 2688'

2. Complete casing record, including plugs:

14" Conductor at 20'

3. Last Produced Never produced
(Date) (Oil, B/D) (Gas, Mcf/D) (Water, B/D)

ADDITIONAL DATA FOR DRY HOLE

4. Oil or Gas showings and results of tests:

None

5. Stratigraphic markers and depths:

Pyramid Hill Sand	2354'
Vedder Sand	2505'
Basement	2635'

6. Formation at bottom: Basement

7. Base of fresh water sands: Sands carry fresh water from surface to basement.

THE PROPOSED WORK IS

Bridge the base of the conductor at 20' and fill conductor to surface with cement.
Notify D.O.G. to witness placing of the cement.

REFERENCE TO FILE OF DATA

Map & Book	U S G S	Bond	Card	Forms 114	Forms 121
	40	349378 11-24-64	✓	2126	B-P.

703 Market Street
San Francisco, California
DO 2-0583
(Address)
(Telephone No.)

PACIFIC OIL & GAS DEVELOPMENT CORP.
(Name of Operator)

By Otto Hackel
Otto Hackel

ADDRESS ONE COPY OF NOTICE TO DIVISION OF OIL AND GAS IN DISTRICT WHERE WELL IS LOCATED

Otto Hackel. 12-4-64
9:30 PM

Pacific Oil & Gas
"Lubking" 26-28

T.D. 2688' in Schist.
top at 2650'

14" Cem 20'
No shows, water all fresh
will plug w/cem 25' — surf.

JRW.

FORM 111

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

REPORT ON PROPOSED OPERATIONS No. P B 464-748

Mr. E. Beck
703 Market St., 2007 Central Tower
San Francisco, California
Agent for PACIFIC OIL AND GAS DEVELOPMENT CORPORATION

Bakersfield Calif.
December 1, 1964

DEAR SIR:

Your proposal to drill Well No. "Lubking" 26-28, Section 28, T. 24S, R. 27E, MD B. & M., -- Field, Tulare County, dated Nov. 17 1964, received Nov. 27 1964, has been examined in conjunction with records filed in this office. Present conditions as shown by the records and the proposal are as follows:

THE NOTICE STATES:
"Legal description of mineral-right lease, consisting of 477 acres, is as follows:
N½ and SW¼ of Sec. 28.
Do mineral and surface leases coincide? Yes.
Location of well: 990' S., along property & section line and 990' E. at right angles to said line from the W¼ corner of Sec. 28.
Elevation of ground above sea level 540' USGS topo datum.
All depth measurements taken from top of K B which is 548' above ground."

PROPOSAL:
"

PROPOSED CASING PROGRAM

Size of casing inches API	Weight	Grade and Type	Top	Bottom	Cementing depths
16"	CONDUCTOR		Surface	20'	20' to surface
7"	20#	J-55	"	2700'	2200' to 2700'

Intended zone of completion: Vedder Sand (Name) 2700-2900' (Depth, top & bottom.)

Estimated total depth 2900'.
It is understood that if changes in this plan become necessary we are to notify you immediately."

DECISION: THE PROPOSAL IS APPROVED PROVIDED THAT:
1. Fluid consistent with good drilling practice shall be used, and the column of fluid maintained to the surface at all times, particularly while pulling the drill pipe.
2. Fresh water and oil or gas zones back of the 7" casing shall be protected, either by lifting cement or by multiple-stage cementing.
3. THIS DIVISION SHALL BE NOTIFIED TO WITNESS a test of the 7" water shut-off.

AGH:CW
CC Co.

Bond No. 349378 dated 11-24-64

E. R. MURRAY-AARON, State Oil and Gas Supervisor

By G. G. Cisa, Deputy

79186 1-63 50M SPO

FORM 105

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

Notice of Intention to Drill New Well

This notice and surety bond must be filed before drilling begins

DIVISION OF OIL AND GAS
RECEIVED
NOV 27 1964
BAKERSFIELD, CALIFORNIA

107-0047

San Francisco Calif. November 17 19 64

DIVISION OF OIL AND GAS

In compliance with Section 3203, Division III, Article 4, Public Resources Code, notice is hereby given that it is our intention to commence drilling well No. "Lubking" #26-28, Sec. 28; T. 24S, R. 27E, M.D.B. & M., (Richgrove Area) ~~Fxx~~ Tulare County.

Legal description of mineral-right lease, consisting of 477 acres, is as follows: N½ and SW¼ of Section 28
(Attach map or plat to scale)

Do mineral and surface leases coincide? Yes X No ____ If answer is no, attach legal description of both surface and mineral leases, and map or plat to scale.

Location of Well: 990 feet South (Direction) along property & section line and 990 feet East (Direction) at right angles to said line from the West Quarter (W¼) corner of section 28

Elevation of ground above sea level 540 feet USGS topo datum.

All depth measurements taken from top of Kelly Bushing (Derrick Floor, Rotary Table or Kelly Bushing) which is 548 feet above ground.

PROPOSED CASING PROGRAM

SIZE OF CASING INCHES A.P.I.	WEIGHT	GRADE AND TYPE	TOP	BOTTOM	CEMENTING DEPTHS
16"	CONDUCTOR		Surface	20'	20' to surface
7"	20#	J-55	Surface	2700'	2200' to 2700'

Intended zone(s) of completion: Vedder Sand (Name) 2700-2900 feet (Depth, top and bottom) Estimated total depth 2900 feet

Map & Book	U S Gas	Bond	Card	Forms 114	Forms 121
		349378 11-24-64		2125	

4-3 11-30-64

It is understood that if changes in this plan become necessary we are to notify you immediately.

Address 703 Market Street
San Francisco 3, California

Telephone Number DO 2-0583

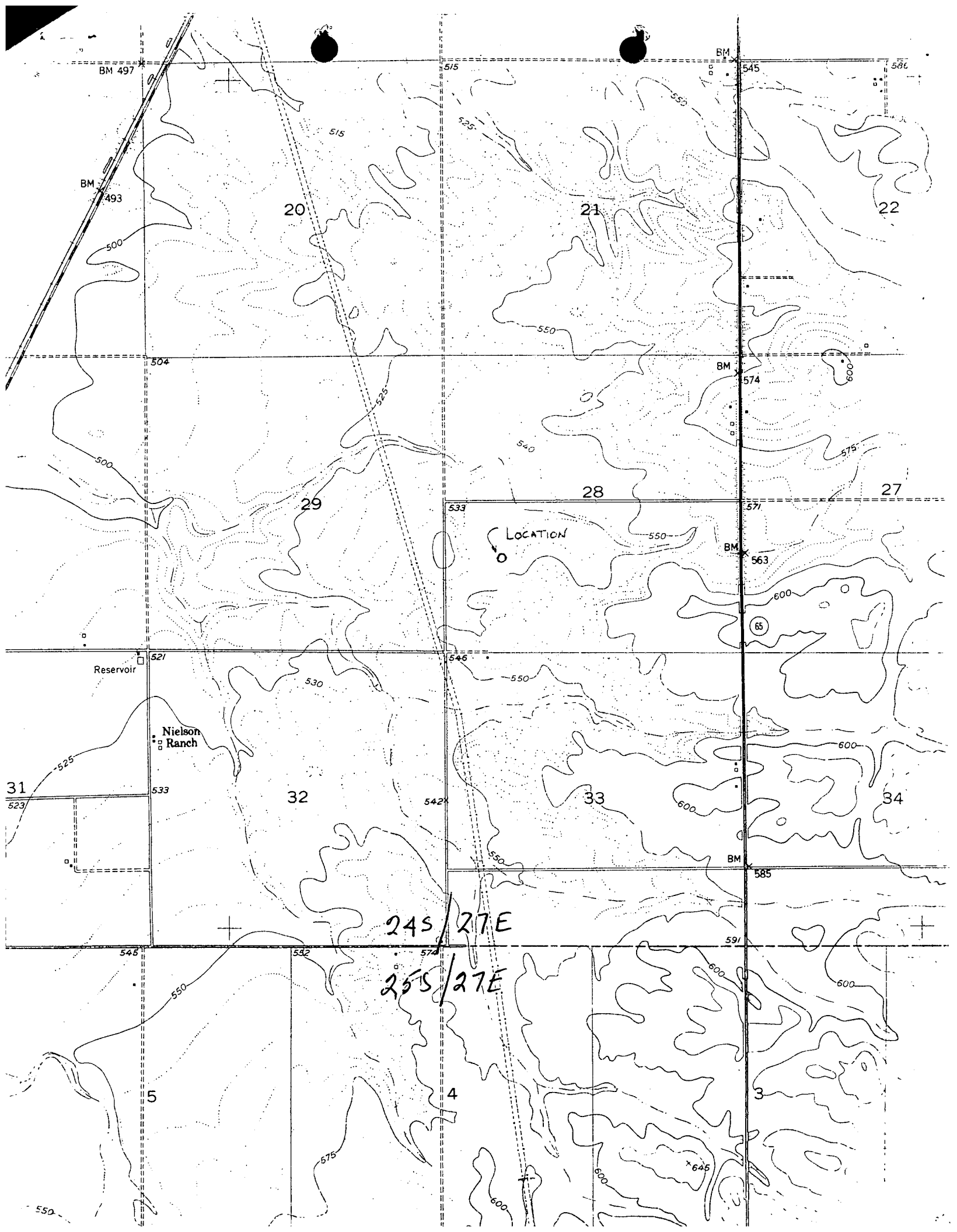
PACIFIC OIL & GAS DEVELOPMENT CORPORATION
(Name of Operator)

By James P. George
James P. George, President

Type of Organization Corporation
(Corporation, Partnership, Individual, etc.)

real

△ SPO


BM 497
BM 493
BM 545
BM 574
BM 563
BM 585
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586
645
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22
29
28
27
31
32
33
34
5
4
3
LOCATION
Reservoir
Nielson Ranch
65
24S/27E
25S/27E

PACIFIC OIL and GAS DEVELOPMENT CORPORATION

CENTRAL TOWER
DOUGLAS 2-0583

PRODUCERS
OF
Petroleum

703 MARKET STREET
SAN FRANCISCO 3

November Twenty-fifth Nineteen Sixty-four

Division of Oil and Gas
State of California
Department of Natural Resources
318 Chester Avenue
Bakersfield, California

Gentlemen:

Filed herewith is NOTICE OF INTENTION TO DRILL NEW WELL for our

WELL NO. LUBKING #26-28
Section 28, T24S, R27E
Richgrove Area
Tulare County, California.

We also enclose Oil and Gas Drilling Bond NO. 349378 written by Peerless Insurance Company under date of November 24, 1964 in amount of $5,000, in accordance therewith.

Very truly yours,

PACIFIC OIL AND GAS DEVELOPMENT CORPORATION

By

Secretary

EB:B
Enclosures 2

FRED G. STEVENOT, DIRECTOR
DEPARTMENT OF NATURAL RESOURCES

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

R. D. BUSH
STATE OIL AND GAS SUPERVISOR

E. H. MUSSER, DEPUTY

Bakersfield, California
September 10, 1930.

PROSPECT WELL

Mr. P. V. Lea, Agent
Vedder Brothers, Inc.
Southern Hotel,
Bakersfield, Cal.

Dear Sir:

Your report of abandonment of well No. "Hart" 1, Sec. 22, T. 24 S., R. 27 E., M. D. B. & M., Tulare County, dated September 5, 1930, and submitted to this Division on our form 102, has been examined in conjunction with records filed in this office.

A review of the reports and records shows that the requirements of this Division, which are based on all information filed with it, have now been fulfilled.

Yours truly,

R. D. BUSH
State Oil and Gas Supervisor.

by E. H. Musser
Deputy Supervisor. CVB

cc-D.G.Vedder
E.H.Musser-Taft.
CVB:SMB

FORM 100. 59498 5-28 15M
CALIFORNIA STATE PRINTING OFFICE

SUBMIT LOG IN DUPLICATE
FILL THIS BLANK IN WITH TYPEWRITER. WRITE ON ONE SIDE OF PAPER ONLY

DIVISION OF OIL AND GAS
RECEIVED
SEP 1 9 1929
BAKERSFIELD, CALIFORNIA

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND MINING

DEPARTMENT OF PETROLEUM AND GAS

LOG OF OIL OR GAS WELL

PROSPECT WELL

FIELD TULARE COUNTY (Richgrove-Ducor Dist) COMPANY VEDDER BROTHERS, ~~INC.~~

Sec. 22, T. 24-S, R. 27-E, M.D. B. & M., Elevation ~~585' est.~~ 604' Well No. Hart No.1

In compliance with the provisions of Chapter 718, Statutes of 1915, as amended, the information given herewith is a complete and correct record of the present condition of the well and all work done thereon, so far as can be determined from all available records.

Signed D L Vedder

Date September 17, 1929 Title President
(President, Secretary or Agent)

The summary on this page is for the ORIGINAL condition of the well

OIL SANDS

1st sand from none to 4th sand from to
2d sand from to 5th sand from to
3d sand from to 6th sand from to

IMPORTANT WATER SANDS

1st sand from to 3d sand from to
2d sand from to 4th sand from to

CASING RECORD

Size of Casing	Where Landed	Where Cut	Weight Per Foot	Threads Per Inch	Kind of Shoe	Make of Casing	Cemented Yes	Cemented No	Number of Sacks
18"	47'						x		41

CEMENTING OR OTHER SHUT-OFF RECORD

Casing, Size	Sacks	Time Set	Method	Test and Result (Give water level and bailing results)
				none

PLUGS AND ADAPTERS

Heaving Plug—Material Length Where set

Adapters —Material Size

TOOLS

Rotary Tools were used from Top to 2320 ft. to ft.

Cable Tools were used from ft. to ft.

PERFORATIONS

State clearly whether a machine was used or casing was drilled in shop

From	To	Size of Holes	Number of Rows	Holes Per Foot	Machine—Shop
ft.	ft.				
ft.	ft.				
ft.	ft.				
ft.	ft.				
ft.	ft.				

Thirty days after completion well produced ..... barrels of oil per day.

The gravity of oil was ..... degrees Baumé. Water in oil amounted to ..... per cent.

Names of Drillers		Names of Tool Dressers	
E. E. Arnold	P. R. Bassett	Burton Gillespie	H. Smith
V. P. Clark		J. M. Grimbstaff	M. Clark
W. J. Matter		P. L. Norman	

Date drilling started August 7, 1929

Date well was completed Sept. 10, 1929

Formations Penetrated by Well

Depth to: Top of Formation	Depth to: Bottom of Formation	Thickness	Name of Formation
0	165		Surface formation
165	270		Sand
270	295		Sticky
295	330		Sand
330	382		Sticky shale
382	602		Sand & shale
602	608		Sandy shale
608	628		Core #1
628	652		Sandy blue shale
652	821		Sand & shale
821	840		Sandy shale
840	880		Sticky shale
880	993		Sandy shale with thin streaks of sticky shale
993	1013		Core #2
1013	1053		Sandy shale
1053	1103		Sticky shale
1103	1125		Sandy shale
1125	1159		Sticky shale
1159	1179		Sandy shale
1179	1233		Sticky shale
1233	1234		Shell
1234	1344		Sandy shale streaked with sticky shale & thin shells.
1344	1401		Sandy shale & thin shells
1401	1421		Core #3
1421	1433		Sandy shale
1433	1465		Sandy shale
1465	1600		Sticky shale
1600	1621		Core #4
1621	1627		Core #5
1627	1637		Core #6
1637	1649		Core #7
1649	1654		Core #8
1654	1669		Core #9
1669	1688		Water sand
1688	1698		Hard sand
1698	1700		Medium hard sand
1700	1716		Core #10
1716	1762		Hard sand
1762	1778		Core #11
1778	1828		Gray sand
1828	1844		Core #12
1844	1862		Core #13
1862	1887		Sand
1887	1890		Overhole
1890	1892		Core #14

M 101. 59499 5-28 15M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND MINING

DEPARTMENT OF PETROLEUM AND GAS

DIVISION OF OIL AND GAS
RECEIVED
SEP 1 8 1929
BAKERSFIELD, CALIFORNIA

LOG OF OIL OR GAS WELL—CONTINUED

FIELD TULARE COUNTY COMPANY VEDDER BROTHERS, INC.

Sec. 22, T. 24-S, R. 27-E, M.D.B. & M. Well No. Hart No.1

FORMATIONS PENETRATED BY WELL

DEPTH TO		Thickness	Name of Formation
Top of Formation	Bottom of Formation		
1892	1921		Hard sand
1921	1923		Hard shell
1923	1930		Medium hard sand
1930	1931		Hard shell
1931	1942		Packed gray sand
1942	1964		Core #15
1964	1969		Hard sandy shale
1969	1989		Core #16
1989	2000		Core #17
2000	2018		Core #18
2018	2038		Core #19
2038	2057		Core #20
2057	2074		Core #21
2074	2094		Core #22
2094	2112		Core #23 1'of hard shell at 2100; 1'of hard shell at 2112
2112	2113		Hard shell
2113	2120		Sandy shale
2120	2121		Hard shell
2121	2122		Hard shell
2122	2131		Core #24
2131	2142		Core #25
2142	2162		Core #26
2162	2172		Fine sand
2172	2174		Hard shell
2174	2184		Fine sand
2184	2198		Sand
2198	2199		Shell
2199	2210		Sand
2210	2229		Core #27
2229	2236		Sand & thin shells
2236	2240		Overhole
2240	2258		Core #28
2258	2277		Core #29
2277	2288		Core #30
2288	2296		Core #31
2296	2312		Core #32
2312	2320		Granite

FORM [redacted]39500 5-28 15M
CALIFORNIA STATE PRINTING OFFICE

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FILL THIS BLANK IN WITH TYPEWRITER. WRITE ON ONE SIDE OF PAPER ONLY

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND MINING

DEPARTMENT OF PETROLEUM AND GAS

CORE RECORD OF OIL OR GAS WELL

FIELD TULARE COUNTY COMPANY VEDDER BROTHERS, INC.

Sec. 22, T. 24-S, R. 27-E, M.D. B. & M., Elevation 585' est. Well No. Hart No. 1

In compliance with the provisions of Section 18, Chapter 718, Statutes of 1915, as amended, the information given herewith is a complete and correct record of all cores taken in this well to the depth on the accompanying log.

Signed D. L. Vedder

Date September 17, 1929 Title President
(President, Secretary or Agent)

DATE	MAKE OF BARREL	SIZE OF BARREL	FROM (DEPTH)	TO (DEPTH)	CORE RECOVERED	DESCRIPTION OF CORE	ETHER TEST	CONDITION OF CORE
8/10	A & O	4"	608	628	8'	6'Green-to Yellowish-gray, rather hard, coarse, unsorted muddy sands & shales. Brown spots. 2'Hard & compact medium to fine grained sandy, micaceous blue shale, few small pebbles. Considerable whitish decomposed material like lime. 12'loss probably in bottom as bottom 3'of core was tight in barrel.		
8/11	A & O	4"	993	1013	6'	3'cavings & sandy blue shale, appears sticky. 3'Medium to coarse unsorted,pebbly,micaceous sandy blue shale. Small white pebbles. 14'loss probably in bottom.		
8/13	A & O	4"	1401	1421	6'	Medium-fine to silty soft loose light gray sand		
8/14	A & O	4"	1600	1621	3'	Firm but friable gray silty shaley sand; carbonaceous matter,fish scales, mica & few small sea shells (spiral type). Few small black gravel pebbles.		
	Smith	4"	1621	1627	6'	Fairly hard, compact, but friable sandy shale, gray with slight brownish cast; harsh feeling. Mica, very few fish scales, carbonaceous matter.		
	Doheny-Stone	5"	1627	1637	10'	Hard,harsh feeling medium to coarse friable gray sandy shale,earthy fracture; gray sand inclusions give a mottled effect. Few small round black pebbles & coarser shiney silicates. Carbonaceous matter & some mica. Very few fish scales.		
8/15	"	5"	1637	1649	3'	Firm but friable,fine to coarse, dusty dark gray sand. Coarse silicates scattered through.		
8/23/	"	5"	1649	1654	3'	Compact but friable, medium to coarse grained, light gray limey sand. 3"lime cemented shell at bottom.		
8/24	"	5"	1654	1669	15'	Fine to fairly coarse, loose, light gray, limey looking sand.		
8/25	"	5"	1700	1716	16'	8'Firm but friable fine to silty gray sand,slightly shaley at bottom. Some mica & carbonaceous matter. 8'Coarse unsorted light gray sand grading finer toward bottom.		
8/26	"	5"	1762	1778	12'	3'Compact but friable light gray coarse sand. 3'Hard & heavy coarse gritty sand, some carbonaceous matter. Not inclined to be friable. 6'Silty to fine soft gray sand.		
	"	5"	1828	1844	16'	12'Medium grained loose light gray sand. Little mica & some carbonaceous matter. 4'Fine grained,very slightly shaley,dark gray sand.		

FORM [illegible] A. 59500 5-28 15M
CALIFORNIA STATE PRINTING OFFICE

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STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND MINING

DEPARTMENT OF PETROLEUM AND GAS

CORE RECORD OF OIL OR GAS WELL

FIELD Tulare County COMPANY Vedder Brothers, Inc.,

Sec. 22, T. 24-S, R. 27-E, M.D.B. & M., Elevation _____ Well No. Hart No. 1

In compliance with the provisions of Section 18, Chapter 718, Statutes of 1915, as amended, the information given herewith is a complete and correct record of all cores taken in this well to the depth on the accompanying log.

DIVISION OF OIL AND GAS
RECEIVED
SEP 1 8 1929
BAKERSFIELD, CALIFORNIA

Signed _____

Date September 17, 1929 Title _____
(President, Secretary or Agent)

DATE	MAKE OF BARREL	SIZE OF BARREL	FROM (DEPTH)	TO (DEPTH)	CORE RECOVERED	DESCRIPTION OF CORE	ETHER TEST	CONDITION OF CORE
8/27	Doheny-Stone	5"	1844	1862	15'	9' Fine to silty dark gray sand, becoming slightly firmer & shaley toward bottom. Shows little mica & carbonaceous matter; very few fish scales. 6' Hard compact heavy fine grained sandy shale. Few fish scales & sea shell fragments; Mica and little carbonaceous matter.		
8/27	"	5"	1890	1892	1'	Medium grained sandy shale.		
8/29	"	5"	1942	1946	3'	Fine to very coarse, loose, dirty-looking, whitish-gray sand with 1" to 2" smooth black pebbles. Bottom 3" was a very sandy shale.		
8/30	"	5"	1946	1964	3'	At top a 1' very hard cemented sandstone shell with a large clam imprint. To 1951 drilled like soft sandy shale; 6" recovered was a soft shaley sand, fine grained. 1951-53 Drilled like shell; recovered pieces of hard shell containing wood fragments. 1953-64 Probably sandy shale.		
8/30	"	5"	1969	1989	12'	6' Compact but friable, slightly micaceous, silt. 6' Soft light gray, limey or ashy-looking, slightly micaceous sand. Contains 1" to 3" irregular shaped pieces of limestone.		
8/31	"	5"	1989	2000	6'	Soft fine grained, slightly micaceous gray silt. Carbonaceous matter.		
8/31	"	5"	2000	2018	18'	2' Very hard limestone shell; carbonaceous matter. 6' Fine, firm but friable, slightly shaley, silt; little mica & carbonaceous matter. 3' Same but little coarser & harder, dirty-looking. Few pebbles & lots of carbonaceous matter. 7' Soft, dark gray silt with hard limestone shell at 2015'.		
8/31	"	5"	2018	2038	7'	Soft fine grained silty dark gray sand, some inclusions of medium to coarse sand. A 6" hard lime stone shell at 2036', lots of carbonaceous matter below this shell.		
9/1	"	4½"	2038	2057	6'	Soft fine grained silty dark gray sand, abundant carbonaceous matter.		
9/1	"	4½"	2057	2074	15'	Same soft sand becoming slightly shaley at bottom. Carbonaceous matter. 1' hard shell about 2058'.		
9/1	"	4½"	2074	2094	9'	3' Very hard & heavy, dark gray, limestone shell 6' Soft fine silty dark gray sand, carbonaceous matter.		

FORM [illegible] 59500 5-28 15M
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE
FILL THIS BLANK IN WITH TYPEWRITER. WRITE ON ONE SIDE OF PAPER ONLY

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND MINING

DEPARTMENT OF PETROLEUM AND GAS

CORE RECORD OF OIL OR GAS WELL

FIELD Tulare County COMPANY Vedder Brothers, Inc.,

Sec. 22, T. 24-S, R. 27-E, B. & M., Elevation Well No. Hart No.1

In compliance with the provisions of Section 18, Chapter 718, Statutes of 1915, as amended, the information signed herewith is a complete and correct record of all cores taken in this well to the depth on the accompanying log.

DIVISION OF OIL AND GAS
RECEIVED
SEP 1 8 1929
BAKERSFIELD, CALIFORNIA

Signed

Date September 17, 1929 Title
(President, Secretary or Agent)

DATE	MAKE OF BARREL	SIZE OF BARREL	FROM (DEPTH)	TO (DEPTH)	CORE RECOVERED	DESCRIPTION OF CORE	ETHER TEST	CONDITION OF CORE
9/1	Doheny-Stone	4½"	2094	2112	9'	1' Soft, slightly shaley, fine grained gray sand. 2' Very hard & heavy, dark gray, limestone shell. 3' Soft, slightly shaley, fine grained gray sand, lots of carbonaceous matter. 3' Fine grained, friable, shaley dark gray sand. Contains coarser grains & small pebbles scattered thru it. Abundant carbonaceous matter. 2" hard limestone shell at 2103' 2103-12 lost & probably soft shaley sand.		
9/4	"	4½"	2122	2131	6'	2' Fine to very coarse, harsh, slightly shaley or muddy sand with lots of small pebbles (1/8" to 3/4"). Has a greenish to bluish-gray cast. 4' Soft fine grained light gray sand. 3" hard shell of same material at bottom.		
9/5	"	4½"	2131	2142	9'	Hard, tough, sticky, dark gray to bluish-green gritty clay-shale. Last 6" soft medium to coarse light gray sand. In places shale contains coarse quartz grains.		
9/5	"	4½"	2142	2162	15'	3' Compact somewhat muddy light gray coarse sand. 9' Compact but friable, gray to slightly greenish-gray silty sand, some mica. Grades coarser & harsher toward bottom. 2' Fine to coarse, unsorted, light gray silt & sand. 1' Firm but friable, slightly micaceous, light gray to slightly bluish-gray, soft-feeling silt.		
9/6	"	4½"	2210	2229	19'	9' Medium to coarse, unsorted, gray sand. 6' Firm, fine, silty blue-gray sand with some mica. 3' Tough sticky greenish clay & strks of fine sand. 1' Fine to silty, light gray sand; few black pebbles at bottom. Foul sulphur ordor.		
9/7	A & O	4"	2240	2258	15'	10' Fine, soft, dark gray, slightly shaley, sand; last 4' shows carbonaceous matter. 5' Decomposed granite.		
9/7	A & O	4"	2258	2277	6'	Decomposed granite		
9/7	A & O	4"	2277	2288	6'	Decomposed granite		
9/8	A & O	4"	2288	2296	3½'	Decomposed granite, hard streaks.		
9/9	A & O	4"	2296	2312	16'	Decomposed granite		

FORM 103. 59502 5-28 15M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND MINING

DEPARTMENT OF PETROLEUM AND GAS

DIVISION OF OIL AND GAS
RECEIVED
SEP 18 1929
BAKERSFIELD, CALIFORNIA

History of Oil or Gas Well

FIELD TULARE COUNTY COMPANY VEDDER BROTHERS, INC.

Sec. 22, T. 24-S, R. 27-E, M.D. B. & M., Well No. Hart No. 1

Signed D. S. Vedder

Date September 17, 1929 Title President
President, Secretary or Agent

It is of the greatest importance to have a complete history of the well. Please state in detail the dates of redrilling, together with the reason for the work and its results. If there were any changes made in the casing, state fully, and if any casing was "sidetracked" or left in the well, give its size and location. If the well has been dynamited, give date, size, position, and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position, and results of pumping or bailing.

Spudded in August 7, 1929, with Doheny-Stone rotary and made 47 feet. Set 39' of 18" conductor pipe at 47' and cemented around same with 41 sacks of cement.

Drilled ahead, taking cores from 608 to 628, 993 to 1013, 1401 to 1421 and then cored practically continuously from 1601 to bottom, 2320'. The ditch was closely watched while drilling for any signs of oil or gas but none were noted, nor did the cores show any cuts. Decomposed granite with hard, solid streaks was encountered from 2253' to 2320' and it was decided to abandon the well.

FORM 102. 68273 6-29 10M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
SEP 8 1930
BAKERSFIELD, CALIFORNIA

LOG OF OIL OR GAS WELL

FIELD TULARE COUNTY (Richgrove-Ducor Dist) COMPANY VEDDER BROTHERS, INC.

Sec. 22, T. 24-S, R. 27-E, M.D. B. & M., Well No. Hart No.1

In compliance with the provisions of Chapter 718, Statutes 1915, as amended, the information given herewith is a complete and correct record of all work done on the well since the previous record, dated September 17, 1929, was filed.

SIGNED [signature]

Date September 5, 1930 Title Agent
(President, Secretary or Agent)

ABANDONMENT

PROSPECT WELL

Depth:- 2320'.

Casing:- 39' - 18" Conductor cemented at 47'.

Filled hole with heavy mud, capped at surface with cement plug and abandoned September 12, 1929.

FORM 111. 68281 6-29 10M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

Report on Proposed Operations

No. P -4-13074

Bakersfield, Cal. September 19 19 29

Mr. O.C.Cochran
650 South Grand Avenue,
Los Angeles, Cal.
Secty. ~~Agent~~ for VEDDER BROTHERS, INC. ~~Company~~

PROSPECT WELL

Dear Sir:

Your proposal to abandon Well No. "Hart" 1,

Section 22, T. 24 S, R. 27 E, M.D.B. & M., ~~Oil Field~~ Tulare County,

dated Sept. 11 19 29, received Sept. 12 19 29, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

Records as stated in notice quoted below.

THE NOTICE STATES:

"Depth:- 2320'.
Casing:-39' - 18" conductor cemented at 47' with 41 sacks of cement.
Spudded in August 7, 1929, and drilled to bottom with rotary. Cored at intervals from 600' to 1600', then practically continuously from there to bottom. The ditch was closely watched while drilling and no showings of oil or gas were noted.
Cored granite from 2270' to 2320'."

PROPOSAL:

"The proposed work is as follows:

Fill hole with heavy mud, cap at surface and abandon."

DECISION:

THE PROPOSAL IS APPROVED.

NOTE: The company should file a report in duplicate on our form 102, after the proposed work has been completed.

cc-R.D.Vedder
Southern Hotel-Bkfd.,
E.H.Musser-Taft.
GGP:SMB

R. D. BUSH
State Oil and Gas Supervisor

By E.H. Musser Deputy

Form 108. 36129—2-5-18—10M

CALIFORNIA STATE MINING BUREAU

Department of Petroleum and Gas

DIVISION OF OIL AND GAS
RECEIVED
SEP 12 1929
BAKERSFIELD, CALIFORNIA

Notice of Intention to Abandon Well

This notice must be given at least five days before work is to begin

Bakersfield, Cal. Sept. 11, 1929

Mr. E. H. Musser
Deputy State Oil and Gas Supervisor
Bakersfield, Cal.

PROSPECT WELL

DEAR SIR:

In compliance with Section 16, Chapter 718, Statutes of 1915, notice is hereby given that it is our intention to abandon well number (Hart) 1 Section 22 T. 24 S R. 27 E, M.D. B. & M., Oil Field Tulare County, commencing work on the at once day of 191

The present condition of the well is as follows:

Depth:- 2320'.

Casing:- 39' - 18" conductor cemented at 47' with 41 sacks of cement.

Spudded in August 7, 1929, and drilled to bottom with rotary. Cored at intervals from 600' to 1600', then practically continuously from there to bottom. The ditch was closely watched while drilling and no showings of oil or gas were noted.
Cored granite from 2270' to 2320'.

The proposed work is as follows:

Fill hole with heavy mud, cap at surface and abandon.

Reference to file of data

Maps	Model	Cross Section	Cards	Forms 114	Forms 121
				358	

Respectfully yours,

VEDDER BROTHERS, INC.
(Name of Company or Operator)

By R. W. Vedder / Vice Pres

Southern Hotel,
Bakersfield, Calif.

Address notice to Deputy State Oil and Gas Supervisor in charge of district where well is located

FORM III. 66281 6-29 10M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

Report on Proposed Operations

No. P-4-13,012

Bakersfield, Cal. July 17, 19 29

Mr. O. C. Cochran,
650 South Grand Avenue,
Los Angeles, Cal.
~~Xxxx~~ Secty. for VEDDER BROTHERS, INC. ~~Xxxxxx~~

PROSPECT WELL

Dear Sir:

Your proposal to drill Well No. "Hart" 1, Section 22, T. 24 S., R. 27 E., M.D. B. & M., ~~Oil Field~~ Tulare County, dated July 2 19 29, received July 6 1929, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

THE NOTICE STATES:

"The elevation of the derrick floor above sea level is 604' feet.
The well is 1000 feet S., and 1650 feet E. from northwest corner.
We estimate that the first productive oil or gas sand should be encountered at a depth of about 604 feet, more or less."

PROPOSAL:

"We propose to use the following strings of casing either cementing or landing them as here indicated:

Size of Casing, Inches	Weight per Foot	New or Second Hand	Depth	Landed or Cemented
12½"	45	New	1000'	Cemented

Supplementary Notice of Intention to Drill will be filed when formations encountered indicate what casings are necessary, showing the casings to be used.

It is understood that if changes in this plan become necessary we are to notify you before cementing or landing casing."

DECISION:

The proposal is approved provided that:

1. The fluid content of each porous formation encountered is determined as definitely as possible.
2. Every possible step is taken to prevent damage:
   a. To oil or gas bearing strata by infiltrating water.
   b. To underground water suitable for irrigation.
3. The well is equipped and drilled in such a manner as to prevent waste of oil or gas by blow-out or fire.
4. The Division is notified as follows:
   a. When a showing of oil or gas is encountered.
   b. Before landing or cementing any casing in the well.
   c. To witness a bailing test of the 12½" shut-off and any other possible water shut-off with the hole open not more than 5' below the cementing depth.

R. D. BUSH
State Oil and Gas Supervisor

By E. H. Musser Deputy

cc-E.H.Musser,Taft
GGP*EMG

FORM 105. 63878 12-28 5M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND MINING
DEPARTMENT OF PETROLEUM AND GAS

STATE MINING BUREAU
JUL 5 1929
RECEIVED

JUL 6 1929
BAKERSFIELD, CAL.

Notice of Intention to Drill New Well
This notice must be given before drilling begins

PROSPECT WELL

107-00463

Los Angeles, Cal. July 2, 1929

MR. H. A. Godde,

Deputy State Oil and Gas Supervisor

Taft, Cal.

PROSPECT WELL

DEAR SIR:

In compliance with Section 17, Chapter 718, Statutes of 1915, as amended, notice is hereby given that it is our intention to commence the work of drilling well No. "Hart" 1, Sec. 22, T. 24 S., R. 27 E., M. D. B. & M., ~~Richgrove Area~~ Oil Field, Tulare County.

The well is 1000 feet ~~XX~~ of S., and 1650 feet E. ~~or~~ ~~WX~~ from northwest corner
(Give location in distance from section corners or other corners of legal subdivision)

* The elevation of the derrick floor above sea level is 604 feet. Elev ?

We propose to use the following strings of casing, either cementing or landing them as here indicated:

Size of Casing, Inches	Weight, Lb. Per Foot	New or Second Hand	Depth	Landed or Cemented
12½"	45	New	1000'	Cemented
Supplementary Notice of Intention to Drill will be filed when formations encountered indicate what casings are necessary, showing the casings to be used.				

It is understood that if changes in this plan become necessary we are to notify you before cementing or landing casing.

We estimate that the first productive oil or gas sand should be encountered at a depth of about ..... feet, more or less.

Respectfully yours

Address 650 South Grand Avenue,
Los Angeles, California.

VEDDER BROTHERS, INC.,
(Name of Company or Operator)

Telephone number VAndike 5361

By O. B. Cochran
Secretary.

ADDRESS NOTICE TO DEPUTY STATE OIL AND GAS SUPERVISOR IN CHARGE OF DISTRICT WHERE WELL IS LOCATED

* Changed by letter dated 8-1, + 29-Fmb.

Reference to file of data

Maps	Model	Cross Section	Cards	Forms 114	Forms 121
Lett. 7/17/29				1248	

Lease consists of: W½ Lot 9 & 21, Lots 10, 19 & 20, and other lands in Sections 21 & 22, T.24 S., R.27 E., Tulare County, California.

13.7 Interview Questionnaire

Advantage Environmental Consultants, LLC
Due Diligence Environmental Questionnaire – ***Owner***

Proposed Tulare Solar Center Project, Tulare County, CA

Please fax to (760) 744-3383 or email to tjacquay@aec-env.com

Completed by: Stuart Knowles

Company or Organization: Trilogy Limited, LP

Title President of Trilogy Asset Management, Inc., general partner

Date: August 23, 2012

1.) Who is the current owner of the subject property and when was it purchased?

Trilogy Limited, LP is the current owner. Trilogy Limited, LP acquired the property as a result of a merger with Farm Management Consultants, Inc. The property was acquired in the mid to late 1980s as a part of a corporate restructuring of another company.

2.) Who are the past owners of the property and years of ownership (if available)?

We currently do not have any information. We believe that the prior owner was Pacific Agricultural Services, Inc. or an affiliated entity.

3.) What was the past use of the subject property?

Property was planted with Kiwis until several years ago. Since the kiwis were abandoned, the property has been vacant.

4.) Are you aware of any environmental cleanup liens that are filed or recorded against the subject property?

We are not aware of any environmental cleanup liens related to the property.

5.) Are you aware of any activity and land use limitations that are in place on the property that have been filed or recorded in a registry?

Williamson Act contract limiting use of property and any applicable zoning regulations.

6.) Are you aware of any specialized knowledge or experience related to the property or nearby properties that is pertinent to potential adverse environmental conditions?

No.

7.) Are you aware of commonly known or reasonably obtainable information that would help AEC to identify conditions indicative of releases or threatened releases of hazardous wastes/materials at the property? Such information includes knowledge of specific chemicals that are present or were once present on the property, spills or other chemicals releases that may have occurred, underground or aboveground storage tanks and environmental cleanups that have been conducted on the property.

No.

8.) 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?

No.

9.) Does the purchase price being paid (or estimated apprised value) for this property reasonably reflect the fair market value of the property? If this assessment is part of a re-finance, do you have any knowledge pertaining to the purchase price of the property when it was last sold in comparison to the fair market value at that time?

Property is subject to an option for lease and no assessment of fair market value has been made by Trilogy.

10.) If there is a significant difference between the purchase price or appraised value and fair market value, have you considered whether the lower purchase price or appraised value is/was due to known or suspect contamination at the property?

Not applicable.

13.8 Qualifications of the Environmental Professional

Advantage Environmental Consultants, LLC

ENVIRONMENTAL DUE DILIGENCE AND REMEDIATION SPECIALISTS

DANIEL A. WEIS, R.E.H.S., REA
Branch Manager – Western Regional Office

EDUCATION

- Bachelor of Arts - University of Delaware, Newark, DE (1995)
- Master of Science – Public Health, San Diego State University, San Diego, CA (1998)

PROFESSIONAL REGISTRATIONS, LICENSES, AND CERTIFICATIONS

- Registered Environmental Health Specialist #8172 in the State of California
- Registered Environmental Assessor #08001 in the State of California
- OSHA 40-hour Hazardous Waste Operations Worker and Supervisor Certifications and Annual Refreshers

PROFESSIONAL SUMMARY

Mr. Weis is the branch manager of AEC's western regional office based in the City of San Marcos, San Diego County, California. He has 14 years of experience in the environmental sciences and consulting fields and is supported by Professional Geologists, Engineers, Certified Asbestos Consultants, Lead Risk Assessors and other technical team members of AEC staff. His responsibilities at AEC include client development and management, project management, technical oversight and quality control for assessment and remediation services, project staffing, and office financial management. Mr. Weis also completes technical services (including field activities) required of select projects completed by AEC. He has a proven ability to manage multiple personnel and technical projects, negotiate with regulatory agencies and maintain strong and trusting client relationships. Such clientele include but are not limited to local government entities, redevelopment agencies, affordable housing developers, Federal government entities, environmental and land use attorneys, architectural and engineering firms, commercial lending institutions, conservancies, commercial/industrial real estate owners/managers, insurance companies, wireless telecommunication carriers and real estate developers. He is also very experienced in the completion of assessment, construction and remediation quality assurance during the completion of urban redevelopment/brownfields projects, many of which have been located in downtown San Diego, Los Angeles and other urban communities throughout the State of California. Mr. Weis has a deep understanding of environmental due diligence guidelines including:

- American Society for Testing and Materials (ASTM) E1527-05, Standard Practice for Environmental Site Assessments (ESAs)
- ASTM E2247-08, Standard Practice for ESA: Phase I ESA Process for Forestland or Rural Properties
- ASTM E1903-97 (Re-approved 2002), Standard Practices for Environmental Site Assessments: Phase II ESA Process
- ASTM E2600-10, Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions
- 40 Code of Federal Regulations (CFR) Part 312 Standards for Conducting All Appropriate Inquiry (AAI)
- 33 CFR Part 137 Oil Spill Liability Standards for Conducting AAI
- United States Department of Housing and Urban Development Guide to Multifamily Accelerated Processing
- Other financial institution specific guidelines including The United States Small Business Administration, Fannie Mae and Freddie Mac

PROFESSIONAL EXPERIENCE

Mr. Weis has completed over 700 due diligence related environmental assessments (i.e. Phase I ESAs, Transaction Screen Analyses, etc.) and has managed over 200 subsurface environmental investigations of soil gas, soil and/or groundwater. Such investigations have also included human health and ecological risk assessments, evaluations of indoor air conditions based on interpretations of subsurface conditions, underground storage tank (UST) evaluation/closure and hazardous waste characterization/management. Subsurface activities performed include the completion of soil borings using various drilling technologies, soil and groundwater sampling, installation and sampling of groundwater monitoring wells, free product evaluations, exploratory trenching and real-time delineation using mobile analytical laboratories and other soil screening technology. Assets evaluated include industrial, commercial, residential, agricultural and vacant land sites throughout the State of California and numerous additional states of the Nation, with many of the assessments completed under the regulatory oversight of local environmental regulatory agencies, the California Regional Water Quality Control Boards (RWQCBs) and the California Environmental Protection Agency Department of Toxic Substances Control (DTSC). Mr. Weis has also conducted and/or managed hundreds of public/environmental health related assessments including electromagnetic field surveys, radionuclide surveys, indoor air quality investigations, radon surveys, drinking water assessments, asbestos containing materials (ACM) and lead-based paint (LBP) surveys and mold/microbial evaluations.

Mr. Weis has managed over 20 remediation related projects primarily related to source removal of subsurface contaminants including but not limited to petroleum hydrocarbons, chlorinated solvents, heavy metals, organochlorine pesticides and other agricultural related chemicals, dioxins and furans and polychlorinated biphenyls (PCBs). Cost effective solutions and various remedial action options are provided prior to remedial action implementation. He is very proficient in developing remediation cost estimates and evaluating multiple remedial strategies on specific projects and conducting budget tracking to ensure the accuracy of such estimates during remedial implementation. Mr. Weis also assists clients with the preparation of contractor bid specifications, contractor bid and change order reviews for such projects, contractor agreements and project status reports/updates and has conducted presentations to client personnel, regulatory agencies and/or the public pertaining to such remediation related projects. He has also assisted numerous clients in cost recovery efforts from private parties and State/Federal funding programs for environmental assessment and remediation work.

SPECIFIC PROJECT EXPERIENCE

48 Property State Lands Exchange Project, Various Locations Throughout San Bernardino and Inyo Counties, California - Project director for the completion of a Phase I ESA in accordance with ASTM Practice E 1527-05, 40 CFR Part 312 Standards for Conducting AAI, and other Federal Agency specific guidelines at forty eight State of California School Lands properties ranging in size from 40 acres to 666.54 acres, located in San Bernardino and Inyo Counties, California and either partially or entirely within Death Valley National Park or the Mojave National Preserve. Due to the remoteness of the properties, the site reconnaissance was conducted via helicopter flyover with intermittent landings as needed to evaluate conditions on the properties. Prior to the site reconnaissance, Geographical Information Systems (GIS) technology was utilized to determine the coordinates of each property (corners and center) and such data was subsequently provided to the aviation company in a format compatible with the helicopter's navigation system. Additional components of the ESA (i.e. interviews, regulatory research and historical research) were completed in strict accordance with the applicable guidelines. The assessment revealed no evidence of recognized environmental conditions (RECs) in connection with the properties and additional assessment was not recommended. The assessment also included an evaluation of several non-scope ASTM considerations including ACM, LBP, radon potential and lead in drinking water. None of the non-scope ASTM evaluation items were found to be a potential concern with respect to the subject properties.

Industrial Facility, West Bradley Avenue, El Cajon, California – Technical lead on pre-business acquisition due diligence (i.e. Phase I/II ESAs) at a facility that conducts the manufacturing of forged metal products for the medical field and aerospace/defense industry and that was historically used for related industrial purposes. Investigation revealed releases of chlorinated solvents to the vadose zone and groundwater underlying the facility, as well as off-site sources of chlorinated solvents to the property in groundwater. Two phases of due diligence related subsurface investigation consisted of 25 direct-push soil

borings and the collection of soil, groundwater, and soil gas samples. The analytical laboratory data was evaluated, deliverables were prepared and preliminary evaluations of risk conducted using County of San Diego Department of Environmental Health and DTSC Johnson and Ettinger vapor intrusion risk models. The case was subsequently referred to the DTSC due to permit by rule conditions and Mr. Weis oversaw and participated in the preparation a current conditions report, Facility Investigation (FI) Work plan and Community Profile for the property under a Corrective Action Consent Agreement between the interested parties and the DTSC. The FI Work Plan described the investigation objectives, pertinent background information related to the facility, current conditions, and a description of each identified Solid Waste Management Unit and Area of Concern identified at the facility. The document also included a Quality Assurance Project Plan (QAPP), data management plan and information pertaining to the proposed reporting structure. Mr. Weis also served as the project lead/coordinator for the implementation of the FI Work Plan which included the installation of sub-slab and at-depth soil gas probes and multiple groundwater monitoring wells, and the drilling of several direct-push soil borings. On-going regulatory negotiation is being conducted in efforts to reach a quantifiable approach to future monitoring of subsurface conditions at the property.

Santa Monica Beach Public Restroom Facilities Replacement Project, Santa Monica, California - Project director and lead on the completion of a Phase I ESA in accordance with ASTM Practice E 1527-05 of eight public restroom facilities on the Santa Monica State Beach in the City of Santa Monica, Los Angeles County, California. ACM, LBP and PCB surveys were also completed in conjunction with the ESA. All components of the ESA were completed in strict accordance with the applicable guidelines. The assessment revealed no evidence of RECs in connection with the properties and additional assessment was not recommended. Recommendations were provided regarding abatement of ACM and LBP identified at the facilities.

Seventh and Market Street Property - 7th and 8th Avenues and Market Street, San Diego, California - Project lead and manager for remediation planning assistance associated with a proposed 55,000 square foot mixed-use redevelopment project including a multiple level subterranean parking garage) in downtown San Diego. Subsurface characterization utilized in conjunction with prior site data included the drilling of ten soil borings using a hollow-stem auger drill rig, excavation of ten exploratory test pits using a backhoe and sampling/analysis of soil samples for various contaminants of concern. The additional data obtained was used for evaluating the feasibility of alternative remedial strategies, revising remedial cost estimates for multiple redevelopment scenarios and preparation of a mitigation plan and community health and safety plan for the project. Eligible costs for the site characterization related work were recovered from the State Water Resources Control Board (SWRCB) Orphan Site Cleanup Account (OSCA) program on behalf of the client. Although redevelopment plans for the project changed due to various factors, funding remained secured for the project and remediation work consisting of a removal action of lead and petroleum hydrocarbon impact soil was conducted. Over 15,000 tons of contaminated soil was removed from the property during the remediation effort. Mr. Weis served as the project lead and manager for the remediation phase of work which included the excavation and segregation of lead and petroleum hydrocarbon contaminated soils within an approximately 30,000 square foot remediation area, backfilling the excavation with non-contaminated soil generated from the proposed excavation as well as soil to be imported to the property and reconstruction of the property to City of San Diego surface parking lot standards. The remediation activities required the displacement of approximately 27,000 cubic yards of soil. Pre-remediation work completed by Mr. Weis included revising the mitigation plan to account for changes to the project plan, assistance with the preparation of technical bid specifications pertaining to the proposed site remediation, pre-bid meeting representation and responding to questions/inquiries from prospective bidders regarding the technical specifications, drawings and other items related to the proposed remediation effort and associated construction activity. Over 99% of $1,500,000 in SWRCB OSCA grant funds for the cleanup was recovered on behalf of the client.

Proposed Charter School Athletic Field Complex, Temple Avenue and Hoover Street, Los Angeles, California - Project lead and manager for the completion of a Phase I and II ESA during a property acquisition due diligence period at this approximately one-acre property located in the northern portion of the downtown area of the City of Los Angeles. The Phase I ESA was completed under ASTM-2005/AAI protocol and supplemental DTSC guidelines. Prior uses of the property included metal plating activity and a gasoline service station. Other deliverables provided and approved by the DTSC included a Preliminary

Environmental Assessment (PEA) Work Plan, QAPP and a Site Specific Health and Safety Plan. Additional subsurface investigation was subsequently completed to close data gaps pertaining to contaminant distribution and remediation costs prior to a removal action completed at the property. Such investigation included the drilling of over 70 soil borings and sample collection/analysis of soil, soil gas and groundwater samples. Remediation (excavation) at the property was completed by on a turn-key basis and consisted of the excavation and disposal of approximately 2,500 cubic yards of metals contaminated soil and removal of a UST under Los Angeles Fire Department oversight. Other duties completed during the course of the project included regulatory negotiation and litigation support. Community outreach associated with the project included a public hearing with the Los Angeles Department of Building and Safety pertaining to the site permit grading and haul route for trucking of contaminated soil and mass mailing of fieldwork notification activities to all properties situated within a 300 foot radius of the property.

Strata - 9th and 10th Avenues and Market Street, San Diego, California – Project manager for the completion of California SWRCB OSCA Program application assistance pertaining to a portion (former gasoline station) of this downtown San Diego redevelopment site, which included a four-level subterranean parking garage. Initial tasks included a review of prior environmental assessments, written response to SWRCB inquiries pertaining to historical site uses and principal contamination sources and preparation of select sections of OSCA Pre-Assessment and Cleanup Grants. Portions of the Grants included a summary of background information pertaining to the property, detailed scopes of work pertaining to prior eligible assessment response work and proposed cleanup response actions and specific budget details. Cost recovery efforts from the OSCA program were successful. Mr. Weis also served as the project lead for general remediation planning assistance which included the preparation of multiple variations of remediation cost estimates for the project and attendance of meetings with the development team. The remediation cost estimate variations were broken down by physical address (parcel) and three contaminant types (lead, chlorinated solvents and petroleum hydrocarbons) and differing combinations of the referenced parameters. The cost estimation included interface with UST removal, excavation, shoring and dewatering contractors, landfill/recycling facilities, trucking companies, vapor barrier design and installation companies and analytical laboratories. Mr. Weis oversaw subsequent third-party oversight activities on behalf of the client as the property was sold to a third-party and included field oversight of remediation activities, budget tracking, invoice approval, compliance with the OSCA Grant conditions, attendance at meetings and other tasks.

Tijuana River Watershed Project, San Diego State University Graduate School of Public Health - In early stages of the project, implemented a stormwater sampling program within various areas of watershed including the use of auto sampling apparatus triggered by rainfall and flow of rivers and creeks of interest. Personally performed analytical laboratory analysis of water and sediment samples using University owned instruments for constituents of concern including heavy metals, nutrients, and bacteriological indicators and maintained chemistry and flow databases for the development of pollutographs, mass loading estimates and calibration of GIS models.

PUBLICATIONS

- Gersberg, R.M., Brown, C., Zambrano, V., Worthington, K., and Weis, D. (2000) Quality of urban runoff in the Tijuana River watershed. In Westerhoff, P. (editors), SCERP Monograph Series (no.2) on Water Issues Along the United States and Mexico Border. : Southwest Center for Environmental Research and Policy, 31-45.
- Weis, D.A., Callaway, J.C., and R.M. Gersberg (2001). Vertical Accretion Rates and Heavy Metal Chronologies in Wetland Sediments of the Tijuana Estuary. Estuaries 24(6A).
- Gersberg, R.M., Pitt, J.L., Weis, D.A., and D.D. Yorkey. Characterizing In-Stream Metal Loading in the Tijuana River Watershed. (2002). National TMDL Science and Policy Conference, Specialty Conference Proceeding on CD Rom, November 13-16, Phoenix, Arizona

AFFILIATIONS

National Brownfields Association
San Diego Housing Federation

Appendix F

Soils Resource Report for
Tulare Solar Center/LESA

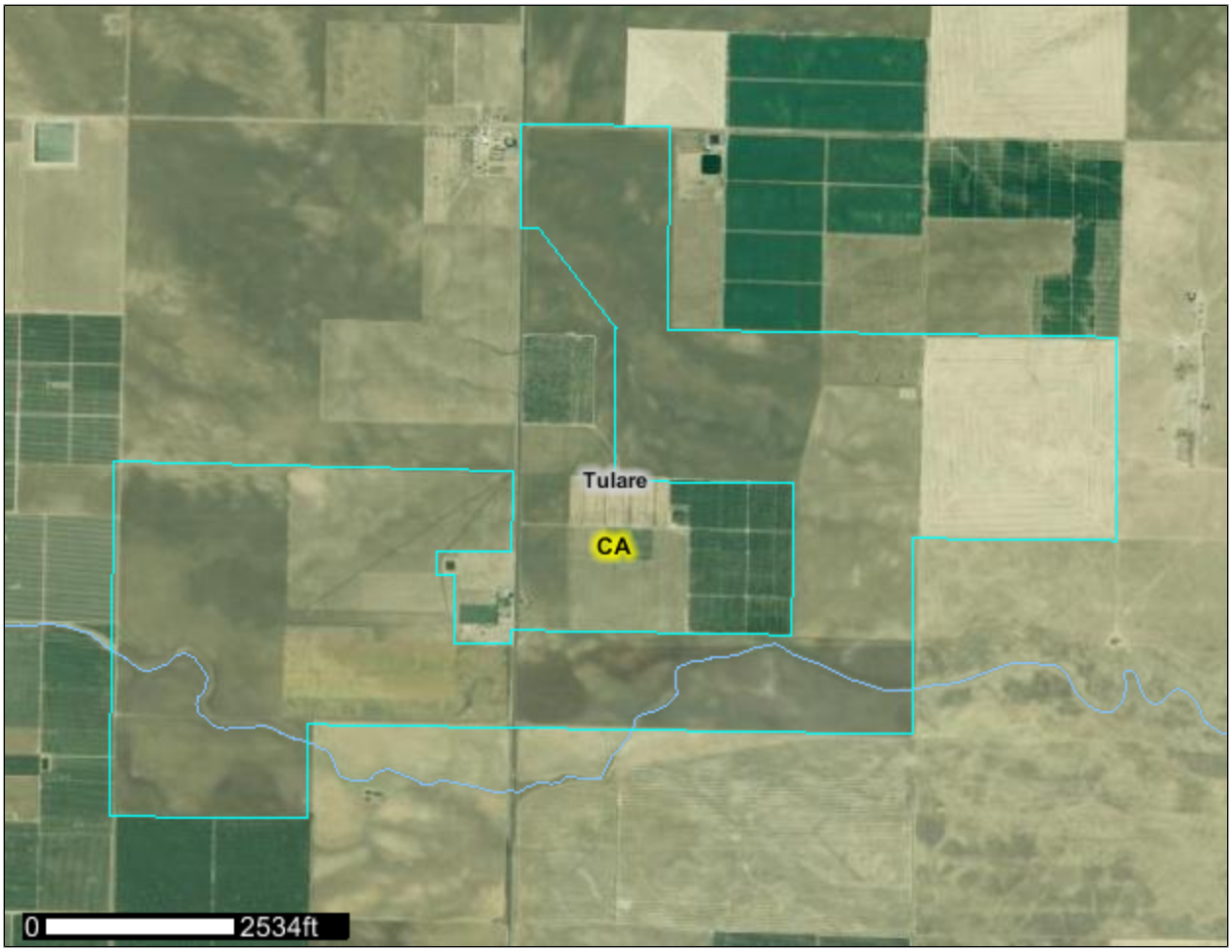
United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Tulare County, California, Central Part; and Tulare County, Western Part, California

Tulare Solar Center Project



July 3, 2012

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

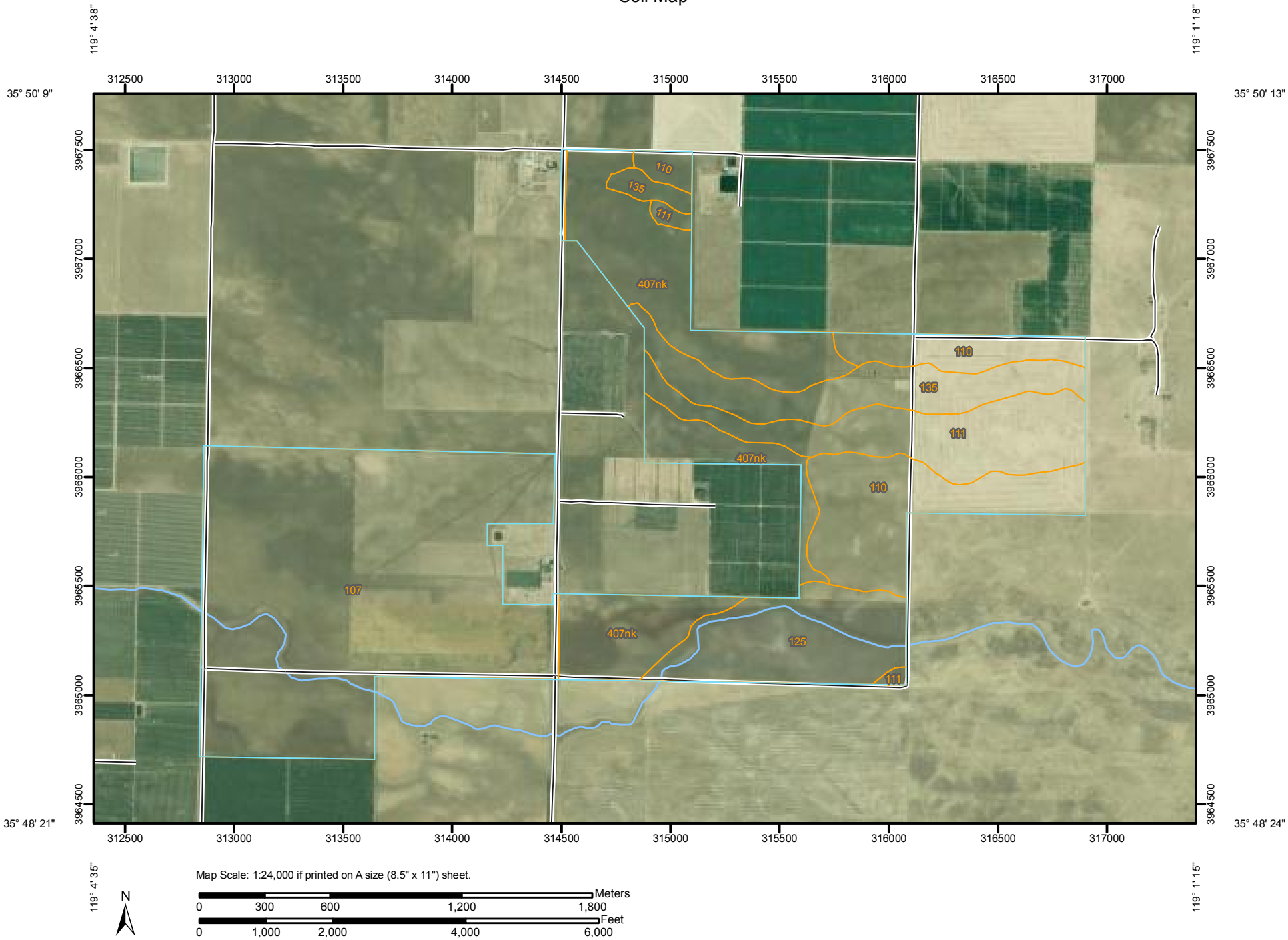
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Gully

Short Steep Slope

Other

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:24,000 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Tulare County, California, Central Part
Survey Area Data: Version 5, Sep 1, 2009

Soil Survey Area: Tulare County, Western Part, California
Survey Area Data: Version 6, Aug 31, 2009

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Date(s) aerial images were photographed: 6/4/2005; 7/1/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Tulare County, California, Central Part (CA660)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
110	Centerville clay, 2 to 9 percent slopes	152.9	13.4%
111	Centerville clay, 9 to 15 percent slopes	112.7	9.9%
125	Exeter loam, 2 to 9 percent slopes	101.6	8.9%
135	Havala loam, 2 to 5 percent slopes	98.1	8.6%
407nk	Centerville clay, 2 to 5 percent slopes	204.8	18.0%
Subtotals for Soil Survey Area		**670.0**	**58.8%**
Totals for Area of Interest		**1,139.6**	**100.0%**

Tulare County, Western Part, California (CA659)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
107	Centerville clay, 2 to 5 percent slopes	469.6	41.2%
Subtotals for Soil Survey Area		**469.6**	**41.2%**
Totals for Area of Interest		**1,139.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the

contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Tulare County, California, Central Part

110—Centerville clay, 2 to 9 percent slopes

Map Unit Setting

Elevation: 300 to 850 feet
Mean annual air temperature: 63 degrees F
Frost-free period: 250 to 300 days

Map Unit Composition

Centerville and similar soils: 80 percent
Minor components: 20 percent

Description of Centerville

Setting

Landform: Alluvial fans, terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granitoid

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 3e
Ecological site: CLAYEY (R017XE001CA)

Typical profile

0 to 18 inches: Clay
18 to 37 inches: Sandy clay, clay

Minor Components

Exeter

Percent of map unit: 5 percent

Porterville

Percent of map unit: 5 percent

San joaquin

Percent of map unit: 5 percent

Unnamed, steeper slopes

Percent of map unit: 5 percent

111—Centerville clay, 9 to 15 percent slopes

Map Unit Setting

Elevation: 300 to 850 feet
Mean annual air temperature: 63 degrees F
Frost-free period: 250 to 300 days

Map Unit Composition

Centerville and similar soils: 85 percent
Minor components: 15 percent

Description of Centerville

Setting

Landform: Alluvial fans, terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granitoid

Properties and qualities

Slope: 9 to 15 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability (nonirrigated): 4e
Ecological site: CLAYEY (R017XE001CA)

Typical profile

0 to 18 inches: Clay
18 to 37 inches: Sandy clay, clay

Minor Components

Porterville

Percent of map unit: 8 percent

Centerville

Percent of map unit: 7 percent

125—Exeter loam, 2 to 9 percent slopes

Map Unit Setting

Elevation: 20 to 700 feet
Mean annual precipitation: 7 to 20 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 250 to 300 days

Map Unit Composition

Exeter and similar soils: 85 percent
Minor components: 15 percent

Description of Exeter

Setting

Landform: Terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granitoid

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: 20 to 40 inches to duripan
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 4e
Ecological site: LOAMY HARDPAN (R017XE115CA)

Typical profile

0 to 14 inches: Loam
14 to 30 inches: Sandy clay loam, clay loam, loam
30 to 43 inches: Duripan
43 to 47 inches: Sand, gravelly sand

Minor Components

San joaquin
Percent of map unit: 4 percent

Wyman
Percent of map unit: 4 percent

Unnamed, brown subsoil
Percent of map unit: 4 percent

Unnamed, ponded
Percent of map unit: 3 percent
Landform: Depressions

135—Havala loam, 2 to 5 percent slopes

Map Unit Setting
Elevation: 1,500 to 4,300 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 175 to 225 days

Map Unit Composition
Havala and similar soils: 85 percent
Minor components: 15 percent

Description of Havala

Setting
Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granitoid

Properties and qualities
Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Very high (about 15.3 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability (nonirrigated): 4e
Ecological site: Loamy Fan Remnant 8-10" P.Z. (R017XE061CA)

Typical profile

0 to 16 inches: Loam
16 to 45 inches: Sandy clay loam, clay loam
45 to 64 inches: Sandy loam, fine sandy loam

Minor Components

Honcut

Percent of map unit: 3 percent

Wyman

Percent of map unit: 3 percent

Yettem

Percent of map unit: 3 percent

Unnamed, calcareous

Percent of map unit: 3 percent

Unnamed, gentler slopes

Percent of map unit: 3 percent

407nk—Centerville clay, 2 to 5 percent slopes

Map Unit Setting

Elevation: 300 to 600 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 59 to 64 degrees F
Frost-free period: 250 to 300 days

Map Unit Composition

Centerville and similar soils: 90 percent
Minor components: 10 percent

Description of Centerville

Setting

Landform: Fan remnants
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granitoid

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: 48 to 60 inches to dense material

Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Very rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 40.0
Available water capacity: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 4e

Typical profile

0 to 7 inches: Clay
7 to 48 inches: Sandy clay
48 to 60 inches: Gravelly sandy clay loam

Minor Components

Exeter

Percent of map unit: 7 percent
Landform: Fan remnants

San joaquin

Percent of map unit: 2 percent
Landform: Fan remnants

Unnamed, ponded

Percent of map unit: 1 percent
Landform: Depressions

Tulare County, Western Part, California

107—Centerville clay, 2 to 5 percent slopes

Map Unit Setting

Elevation: 300 to 600 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 59 to 64 degrees F
Frost-free period: 250 to 300 days

Map Unit Composition

Centerville and similar soils: 90 percent
Minor components: 10 percent

Description of Centerville

Setting

Landform: Fan remnants
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granitoid

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: 48 to 60 inches to dense material
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Very rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 40.0
Available water capacity: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 4e

Typical profile

0 to 7 inches: Clay
7 to 48 inches: Sandy clay
48 to 60 inches: Gravelly sandy clay loam

Minor Components

Exeter

Percent of map unit: 7 percent
Landform: Fan remnants

San joaquin

Percent of map unit: 2 percent
Landform: Fan remnants

Unnamed, ponded

Percent of map unit: 1 percent
Landform: Depressions

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

California Revised Storie Index (CA)

The Storie Index is a soil rating based on soil properties that govern a soil's potential for cultivated agriculture in California.

The Storie Index assesses the productivity of a soil from the following four characteristics: Factor A, degree of soil profile development; factor B, texture of the surface layer; factor C, slope; and factor X, manageable features, including drainage, microrelief, fertility, acidity, erosion, and salt content. A score ranging from 0 to 100 percent is determined for each factor, and the scores are then multiplied together to derive an index rating.

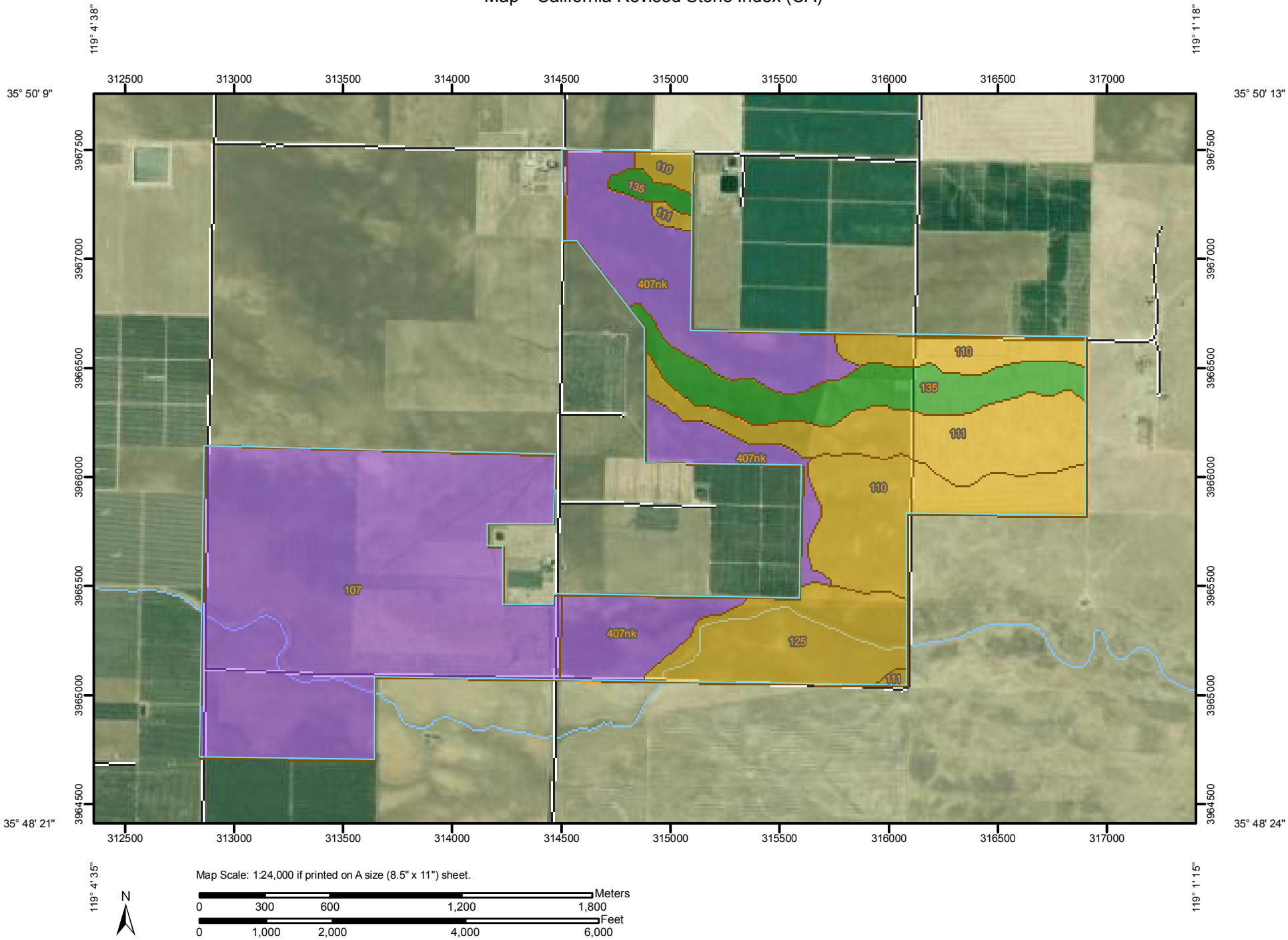
For simplification, Storie Index ratings have been combined into six grade classes as follows: Grade 1 (excellent), 100 to 80; grade 2 (good), 79 to 60; grade 3 (fair), 59 to 40; grade 4 (poor), 39 to 20; grade 5 (very poor), 19 to 10; and grade 6 (nonagricultural), less than 10.

The components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined

by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as the one shown for the map unit. The percent composition of each component in a particular map unit is given to help the user better understand the extent to which the rating applies to the map unit.

Other components with different ratings may occur in each map unit. The ratings for all components, regardless the aggregated rating of the map unit, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Custom Soil Resource Report
Map—California Revised Storie Index (CA)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

Grade One - Excellent

Grade Two - Good

Grade Three - Fair

Grade Four - Poor

Grade Five - Very Poor

Grade Six - Nonagricultural

Not rated

not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:24,000 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Tulare County, California, Central Part
Survey Area Data: Version 5, Sep 1, 2009

Soil Survey Area: Tulare County, Western Part, California
Survey Area Data: Version 6, Aug 31, 2009

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Date(s) aerial images were photographed: 6/4/2005; 7/1/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—California Revised Storie Index (CA)

California Revised Storie Index (CA)— Summary by Map Unit — Tulare County, California, Central Part (CA660)					
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Acres in AOI**	**Percent of AOI**
110	Centerville clay, 2 to 9 percent slopes	Grade Four - Poor	Centerville (80%)	152.9	13.4%
111	Centerville clay, 9 to 15 percent slopes	Grade Four - Poor	Centerville (85%)	112.7	9.9%
125	Exeter loam, 2 to 9 percent slopes	Grade Four - Poor	Exeter (85%)	101.6	8.9%
135	Havala loam, 2 to 5 percent slopes	Grade One - Excellent	Havala (85%)	98.1	8.6%
407nk	Centerville clay, 2 to 5 percent slopes	Grade Three - Fair	Centerville (90%)	204.8	18.0%
Subtotals for Soil Survey Area				**670.0**	**58.8%**
Totals for Area of Interest				**1,139.6**	**100.0%**

California Revised Storie Index (CA)— Summary by Map Unit — Tulare County, Western Part, California (CA659)					
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Acres in AOI**	**Percent of AOI**
107	Centerville clay, 2 to 5 percent slopes	Grade Three - Fair	Centerville (90%)	469.6	41.2%
Subtotals for Soil Survey Area				**469.6**	**41.2%**
Totals for Area of Interest				**1,139.6**	**100.0%**

Rating Options—California Revised Storie Index (CA)

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie.

The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Nonirrigated Capability Class

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Only class and subclass are included in this data set.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have few limitations that restrict their use.

Class 2 soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

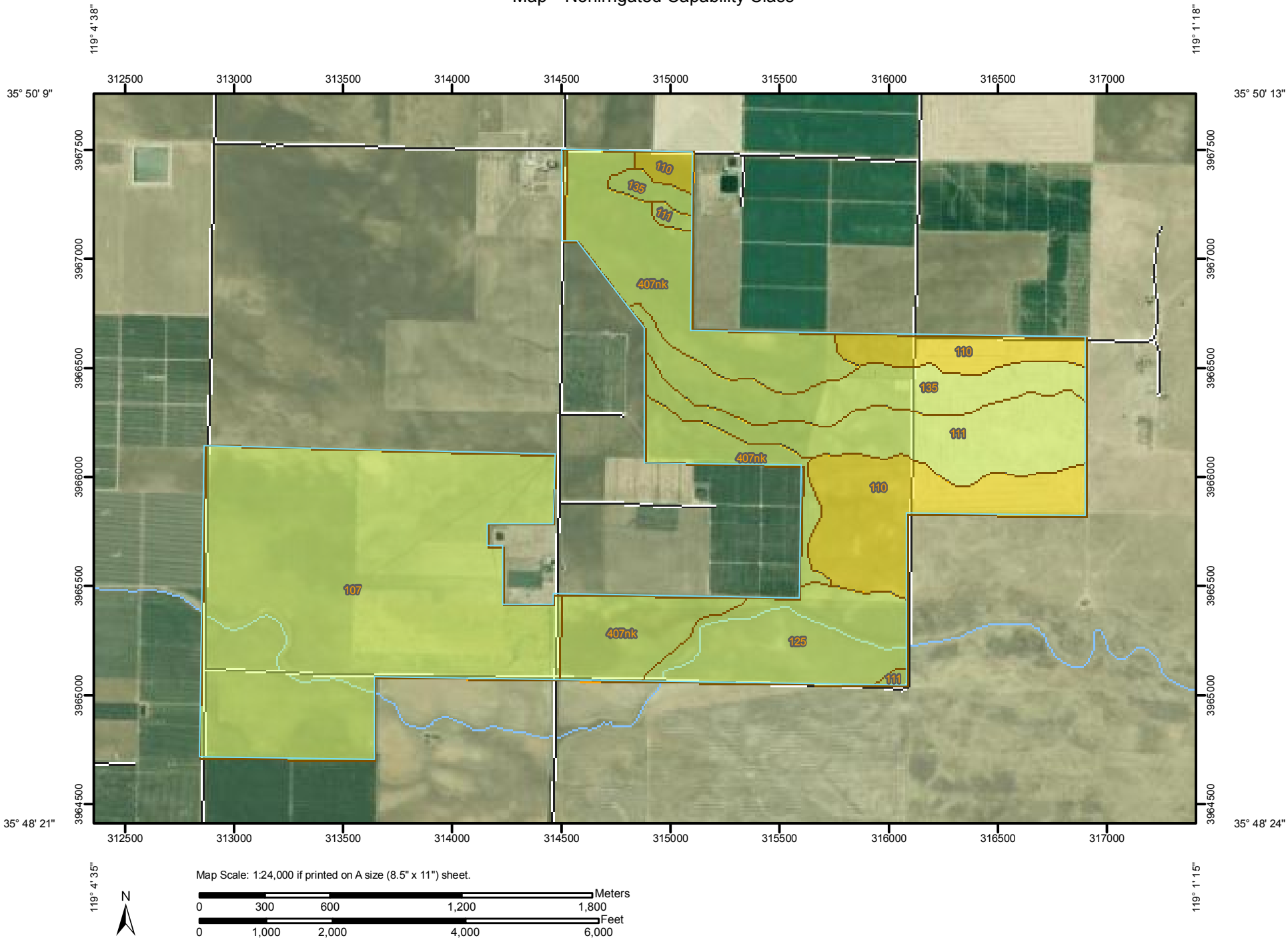
Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Custom Soil Resource Report
Map—Nonirrigated Capability Class



Map Scale: 1:24,000 if printed on A size (8.5" x 11") sheet.

N

Meters
0 300 600 1,200 1,800

Feet
0 1,000 2,000 4,000 6,000

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

Capability Class - I

Capability Class - II

Capability Class - III

Capability Class - IV

Capability Class - V

Capability Class - VI

Capability Class - VII

Capability Class - VIII

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:24,000 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Tulare County, California, Central Part
Survey Area Data: Version 5, Sep 1, 2009

Soil Survey Area: Tulare County, Western Part, California
Survey Area Data: Version 6, Aug 31, 2009

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Date(s) aerial images were photographed: 6/4/2005; 7/1/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Nonirrigated Capability Class

Nonirrigated Capability Class— Summary by Map Unit — Tulare County, California, Central Part (CA660)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
110	Centerville clay, 2 to 9 percent slopes	3	152.9	13.4%
111	Centerville clay, 9 to 15 percent slopes	4	112.7	9.9%
125	Exeter loam, 2 to 9 percent slopes	4	101.6	8.9%
135	Havala loam, 2 to 5 percent slopes	4	98.1	8.6%
407nk	Centerville clay, 2 to 5 percent slopes	4	204.8	18.0%
Subtotals for Soil Survey Area			**670.0**	**58.8%**
Totals for Area of Interest			**1,139.6**	**100.0%**

Nonirrigated Capability Class— Summary by Map Unit — Tulare County, Western Part, California (CA659)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
107	Centerville clay, 2 to 5 percent slopes	4	469.6	41.2%
Subtotals for Soil Survey Area			**469.6**	**41.2%**
Totals for Area of Interest			**1,139.6**	**100.0%**

Rating Options—Nonirrigated Capability Class

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule

indicates whether the lower or higher group value should be returned in the case of a percent composition tie.

The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

References

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Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the "National Soil Survey Handbook."

ABC soil

A soil having an A, a B, and a C horizon.

Ablation till

Loose, relatively permeable earthy material deposited during the downwasting of nearly static glacial ice, either contained within or accumulated on the surface of the glacier.

AC soil

A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil

The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil

Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil

A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial cone

A semiconical type of alluvial fan having very steep slopes. It is higher, narrower, and steeper than a fan and is composed of coarser and thicker layers of material deposited by a combination of alluvial episodes and (to a much lesser degree) landslides (debris flow). The coarsest materials tend to be concentrated at the apex of the cone.

Alluvial fan

A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.

Alluvium

Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Alpha,alpha-dipyridyl

A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

Animal unit month (AUM)

The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions

Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon

A subsoil horizon characterized by an accumulation of illuvial clay.

Arroyo

The flat-floored channel of an ephemeral stream, commonly with very steep to vertical banks cut in unconsolidated material. It is usually dry but can be transformed into a temporary watercourse or short-lived torrent after heavy rain within the watershed.

Aspect

The direction toward which a slope faces. Also called slope aspect.

Association, soil

A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity)

The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low: 0 to 3
Low: 3 to 6
Moderate: 6 to 9
High: 9 to 12
Very high: More than 12

Backslope

The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Backswamp

A flood-plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.

Badland

A landscape that is intricately dissected and characterized by a very fine drainage network with high drainage densities and short, steep slopes and narrow interfluves. Badlands develop on surfaces that have little or no vegetative cover overlying unconsolidated or poorly cemented materials (clays, silts, or sandstones) with, in some cases, soluble minerals, such as gypsum or halite.

Bajada

A broad, gently inclined alluvial piedmont slope extending from the base of a mountain range out into a basin and formed by the lateral coalescence of a series of alluvial fans. Typically, it has a broadly undulating transverse profile, parallel to the mountain front, resulting from the convexities of component fans. The term is generally restricted to constructional slopes of intermontane basins.

Basal area

The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation

The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope (geomorphology)

A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Bedding plane

A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology) from the preceding or following layer; a plane of deposition. It commonly marks a change

in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.

Bedding system

A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock

The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography

A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench terrace

A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum

Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Blowout (map symbol)

A saucer-, cup-, or trough-shaped depression formed by wind erosion on a preexisting dune or other sand deposit, especially in an area of shifting sand or loose soil or where protective vegetation is disturbed or destroyed. The adjoining accumulation of sand derived from the depression, where recognizable, is commonly included. Blowouts are commonly small.

Borrow pit (map symbol)

An open excavation from which soil and underlying material have been removed, usually for construction purposes.

Bottom land

An informal term loosely applied to various portions of a flood plain.

Boulders

Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks

A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.

Breast height

An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management

Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Butte

An isolated, generally flat-topped hill or mountain with relatively steep slopes and talus or precipitous cliffs and characterized by summit width that is less than the height of bounding escarpments; commonly topped by a caprock of resistant material and representing an erosion remnant carved from flat-lying rocks.

Cable yarding

A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil

A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Caliche

A general term for a prominent zone of secondary carbonate accumulation in surficial materials in warm, subhumid to arid areas. Caliche is formed by both geologic and pedologic processes. Finely crystalline calcium carbonate forms a nearly continuous surface-coating and void-filling medium in geologic (parent) materials. Cementation ranges from weak in nonindurated forms to very strong in indurated forms. Other minerals (e.g., carbonates, silicate, and sulfate) may occur as accessory cements. Most petrocalcic horizons and some calcic horizons are caliche.

California bearing ratio (CBR)

The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy

The leafy crown of trees or shrubs. (See Crown.)

Canyon

A long, deep, narrow valley with high, precipitous walls in an area of high local relief.

Capillary water

Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena

A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.

Cation

An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity

The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Catsteps

See Terracettes.

Cement rock

Shaly limestone used in the manufacture of cement.

Channery soil material

Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment

Control of unwanted vegetation through the use of chemicals.

Chiseling

Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Cirque

A steep-walled, semicircular or crescent-shaped, half-bowl-like recess or hollow, commonly situated at the head of a glaciated mountain valley or high on the side of a mountain. It was produced by the erosive activity of a mountain glacier. It commonly contains a small round lake (tarn).

Clay

As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions

See Redoximorphic features.

Clay film

A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Clay spot (map symbol)

A spot where the surface texture is silty clay or clay in areas where the surface layer of the soils in the surrounding map unit is sandy loam, loam, silt loam, or coarser.

Claypan

A dense, compact subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. The layer restricts the downward movement of water through the soil. A claypan is commonly hard when dry and plastic and sticky when wet.

Climax plant community

The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil

Sand or loamy sand.

Cobble (or cobblestone)

A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material

Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility)

See Linear extensibility.

Colluvium

Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

Complex slope

Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil

A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions

See Redoximorphic features.

Conglomerate

A coarse grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system

Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage

A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil

Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the “Soil Survey Manual.”

Contour stripcropping

Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section

The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat)

A type of limnic layer composed predominantly of fecal material derived from aquatic animals.

Corrosion (geomorphology)

A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations)

Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop

A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management

Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system

Growing crops according to a planned system of rotation and management practices.

Cross-slope farming

Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown

The upper part of a tree or shrub, including the living branches and their foliage.

Cryoturbate

A mass of soil or other unconsolidated earthy material moved or disturbed by frost action. It is typically coarser than the underlying material.

Cuesta

An asymmetric ridge capped by resistant rock layers of slight or moderate dip (commonly less than 15 percent slopes); a type of homocline produced by differential erosion of interbedded resistant and weak rocks. A cuesta has a long, gentle slope on one side (dip slope) that roughly parallels the inclined beds; on the other side, it has a relatively short and steep or clifflike slope (scarp) that cuts through the tilted rocks.

Culmination of the mean annual increment (CMAI)

The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age,

the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave

The walls of excavations tend to cave in or slough.

Decreasers

The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing

Postponing grazing or resting grazing land for a prescribed period.

Delta

A body of alluvium having a surface that is fan shaped and nearly flat; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

Dense layer

A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depression, closed (map symbol)

A shallow, saucer-shaped area that is slightly lower on the landscape than the surrounding area and that does not have a natural outlet for surface drainage.

Depth, soil

Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Desert pavement

A natural, residual concentration or layer of wind-polished, closely packed gravel, boulders, and other rock fragments mantling a desert surface. It forms where wind action and sheetwash have removed all smaller particles or where rock fragments have migrated upward through sediments to the surface. It typically protects the finer grained underlying material from further erosion.

Diatomaceous earth

A geologic deposit of fine, grayish siliceous material composed chiefly or entirely of the remains of diatoms.

Dip slope

A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace)

A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming

A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Drainage class (natural)

Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the “Soil Survey Manual.”

Drainage, surface

Runoff, or surface flow of water, from an area.

Drainageway

A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Draw

A small stream valley that generally is shallower and more open than a ravine or gulch and that has a broader bottom. The present stream channel may appear inadequate to have cut the drainageway that it occupies.

Drift

A general term applied to all mineral material (clay, silt, sand, gravel, and boulders) transported by a glacier and deposited directly by or from the ice or transported by running water emanating from a glacier. Drift includes unstratified material (till) that forms moraines and stratified deposits that form outwash plains, eskers, kames, varves, and glaciofluvial sediments. The term is generally applied to Pleistocene glacial deposits in areas that no longer contain glaciers.

Drumlin

A low, smooth, elongated oval hill, mound, or ridge of compact till that has a core of bedrock or drift. It commonly has a blunt nose facing the direction from which the ice approached and a gentler slope tapering in the other direction. The longer axis is parallel to the general direction of glacier flow. Drumlins are products of

streamline (laminar) flow of glaciers, which molded the subglacial floor through a combination of erosion and deposition.

Duff

A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Dune

A low mound, ridge, bank, or hill of loose, windblown granular material (generally sand), either barren and capable of movement from place to place or covered and stabilized with vegetation but retaining its characteristic shape.

Earthy fill

See Mine spoil.

Ecological site

An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Eluviation

The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation

A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian deposit

Sand-, silt-, or clay-sized clastic material transported and deposited primarily by wind, commonly in the form of a dune or a sheet of sand or loess.

Ephemeral stream

A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation

A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion

The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (accelerated)

Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion (geologic)

Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion pavement

A surficial lag concentration or layer of gravel and other rock fragments that remains on the soil surface after sheet or rill erosion or wind has removed the finer soil particles and that tends to protect the underlying soil from further erosion.

Erosion surface

A land surface shaped by the action of erosion, especially by running water.

Escarpment

A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

Escarpment, bedrock (map symbol)

A relatively continuous and steep slope or cliff, produced by erosion or faulting, that breaks the general continuity of more gently sloping land surfaces. Exposed material is hard or soft bedrock.

Escarpment, nonbedrock (map symbol)

A relatively continuous and steep slope or cliff, generally produced by erosion but in some places produced by faulting, that breaks the continuity of more gently sloping land surfaces. Exposed earthy material is nonsoil or very shallow soil.

Esker

A long, narrow, sinuous, steep-sided ridge of stratified sand and gravel deposited as the bed of a stream flowing in an ice tunnel within or below the ice (subglacial) or between ice walls on top of the ice of a wasting glacier and left behind as high ground when the ice melted. Eskers range in length from less than a kilometer to more than 160 kilometers and in height from 3 to 30 meters.

Extrusive rock

Igneous rock derived from deep-seated molten matter (magma) deposited and cooled on the earth's surface.

Fallow

Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown.

The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan remnant

A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, that have been either dissected or partially buried.

Fertility, soil

The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat)

The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity

The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fill slope

A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil

Sandy clay, silty clay, or clay.

Firebreak

An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom

An obsolete, informal term loosely applied to the lowest flood-plain steps that are subject to regular flooding.

Flaggy soil material

Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone

A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain

The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Flood-plain landforms

A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

Flood-plain splay

A fan-shaped deposit or other outspread deposit formed where an overloaded stream breaks through a levee (natural or artificial) and deposits its material (commonly coarse grained) on the flood plain.

Flood-plain step

An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.

Fluvial

Of or pertaining to rivers or streams; produced by stream or river action.

Foothills

A region of steeply sloping hills that fringes a mountain range or high-plateau escarpment. The hills have relief of as much as 1,000 feet (300 meters).

Footslope

The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb

Any herbaceous plant not a grass or a sedge.

Forest cover

All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type

A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan

A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil

The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gilgai

Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.

Glaciofluvial deposits

Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur in the form of outwash plains, valley trains, deltas, kames, eskers, and kame terraces.

Glaciolacustrine deposits

Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are bedded or laminated.

Gleyed soil

Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping

Growing crops in strips that grade toward a protected waterway.

Grassed waterway

A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel

Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravel pit (map symbol)

An open excavation from which soil and underlying material have been removed and used, without crushing, as a source of sand or gravel.

Gravelly soil material

Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Gravelly spot (map symbol)

A spot where the surface layer has more than 35 percent, by volume, rock fragments that are mostly less than 3 inches in diameter in an area that has less than 15 percent rock fragments.

Green manure crop (agronomy)

A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water

Water filling all the unblocked pores of the material below the water table.

Gully (map symbol)

A small, steep-sided channel caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage whereas a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock

Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim

Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hardpan

A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head slope (geomorphology)

A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat)

Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops

Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill

A generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

Hillslope

A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

Horizon, soil

A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon: An organic layer of fresh and decaying plant residue.

L horizon: A layer of organic and mineral limnic materials, including coprogenous earth (sedimentary peat), diatomaceous earth, and marl.

A horizon: The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon: The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon: The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon: The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon: Soft, consolidated bedrock beneath the soil.

R layer: Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

M layer: A root-limiting subsoil layer consisting of nearly continuous, horizontally oriented, human-manufactured materials.

W layer: A layer of water within or beneath the soil.

Humus

The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups

Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties include depth to a seasonal high water table, the infiltration rate, and depth to a layer that significantly restricts the downward movement of water. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock

Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

Illuviation

The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil

A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers

Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration

The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity

The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate

The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate

The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Very low: Less than 0.2

Low: 0.2 to 0.4

Moderately low: 0.4 to 0.75

Moderate: 0.75 to 1.25

Moderately high: 1.25 to 1.75

High: 1.75 to 2.5

Very high: More than 2.5

Interfluve

A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology)

A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream

A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders

On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions

See Redoximorphic features.

Irrigation

Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin: Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border: Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding: Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation: Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle): Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow: Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler: Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation: Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding: Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame

A low mound, knob, hummock, or short irregular ridge composed of stratified sand and gravel deposited by a subglacial stream as a fan or delta at the margin of a melting glacier; by a supraglacial stream in a low place or hole on the surface of the glacier; or as a ponded deposit on the surface or at the margin of stagnant ice.

Karst (topography)

A kind of topography that formed in limestone, gypsum, or other soluble rocks by dissolution and that is characterized by closed depressions, sinkholes, caves, and underground drainage.

Knoll

A small, low, rounded hill rising above adjacent landforms.

Ksat

See Saturated hydraulic conductivity.

Lacustrine deposit

Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain

A nearly level surface marking the floor of an extinct lake filled by well sorted, generally fine textured, stratified deposits, commonly containing varves.

Lake terrace

A narrow shelf, partly cut and partly built, produced along a lakeshore in front of a scarp line of low cliffs and later exposed when the water level falls.

Landfill (map symbol)

An area of accumulated waste products of human habitation, either above or below natural ground level.

Landslide

A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones

Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Lava flow (map symbol)

A solidified, commonly lobate body of rock formed through lateral, surface outpouring of molten lava from a vent or fissure.

Leaching

The removal of soluble material from soil or other material by percolating water.

Levee (map symbol)

An embankment that confines or controls water, especially one built along the banks of a river to prevent overflow onto lowlands.

Linear extensibility

Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^{1}/_{3}$- or $^{1}/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit

The moisture content at which the soil passes from a plastic to a liquid state.

Loam

Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess

Material transported and deposited by wind and consisting dominantly of silt-sized particles.

Low strength

The soil is not strong enough to support loads.

Low-residue crops

Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Marl

An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions; formed primarily under freshwater lacustrine conditions but also formed in more saline environments.

Marsh or swamp (map symbol)

A water-saturated, very poorly drained area that is intermittently or permanently covered by water. Sedges, cattails, and rushes are the dominant vegetation in marshes, and trees or shrubs are the dominant vegetation in swamps. Not used in map units where the named soils are poorly drained or very poorly drained.

Mass movement

A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.

Masses

See Redoximorphic features.

Meander belt

The zone within which migration of a meandering channel occurs; the flood-plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.

Meander scar

A crescent-shaped, concave or linear mark on the face of a bluff or valley wall, produced by the lateral erosion of a meandering stream that impinged upon and undercut the bluff.

Meander scroll

One of a series of long, parallel, close-fitting, crescent-shaped ridges and troughs formed along the inner bank of a stream meander as the channel migrated laterally down-valley and toward the outer bank.

Mechanical treatment

Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil

Very fine sandy loam, loam, silt loam, or silt.

Mesa

A broad, nearly flat topped and commonly isolated landmass bounded by steep slopes or precipitous cliffs and capped by layers of resistant, nearly horizontal rocky material. The summit width is characteristically greater than the height of the bounding escarpments.

Metamorphic rock

Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement at depth in the earth's crust. Nearly all such rocks are crystalline.

Mine or quarry (map symbol)

An open excavation from which soil and underlying material have been removed and in which bedrock is exposed. Also denotes surface openings to underground mines.

Mine spoil

An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

Mineral soil

Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage

Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area

A kind of map unit that has little or no natural soil and supports little or no vegetation.

Miscellaneous water (map symbol)

Small, constructed bodies of water that are used for industrial, sanitary, or mining applications and that contain water most of the year.

Moderately coarse textured soil

Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil

Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon

A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Moraine

In terms of glacial geology, a mound, ridge, or other topographically distinct accumulation of unsorted, unstratified drift, predominantly till, deposited primarily by the direct action of glacial ice in a variety of landforms. Also, a general term for a landform composed mainly of till (except for kame moraines, which are composed mainly of stratified outwash) that has been deposited by a glacier. Some types of moraines are disintegration, end, ground, kame, lateral, recessional, and terminal.

Morphology, soil

The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil

Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mountain

A generic term for an elevated area of the land surface, rising more than 1,000 feet (300 meters) above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range. Mountains are formed primarily by tectonic activity and/or volcanic action but can also be formed by differential erosion.

Muck

Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mucky peat

See Hemic soil material.

Mudstone

A blocky or massive, fine grained sedimentary rock in which the proportions of clay and silt are approximately equal. Also, a general term for such material as clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.

Munsell notation

A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon

A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil

A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules

See Redoximorphic features.

Nose slope (geomorphology)

A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).

Nutrient, plant

Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter

Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low: Less than 0.5 percent
Low: 0.5 to 1.0 percent
Moderately low: 1.0 to 2.0 percent
Moderate: 2.0 to 4.0 percent
High: 4.0 to 8.0 percent
Very high: More than 8.0 percent

Outwash

Stratified and sorted sediments (chiefly sand and gravel) removed or “washed out” from a glacier by meltwater streams and deposited in front of or beyond the end moraine or the margin of a glacier. The coarser material is deposited nearer to the ice.

Outwash plain

An extensive lowland area of coarse textured glaciofluvial material. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Paleoterrace

An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.

Pan

A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material

The unconsolidated organic and mineral material in which soil forms.

Peat

Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped

An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment

A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on and is being (or was) transported across a gently sloping erosional surface at the foot of a receding hill or mountain slope.

Pedon

The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation

The movement of water through the soil.

Perennial water (map symbol)

Small, natural or constructed lakes, ponds, or pits that contain water most of the year.

Permafrost

Ground, soil, or rock that remains at or below 0 degrees C for at least 2 years. It is defined on the basis of temperature and is not necessarily frozen.

pH value

A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil

A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping

Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting

Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plastic limit

The moisture content at which a soil changes from semisolid to plastic.

Plasticity index

The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plateau (geomorphology)

A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.

Playa

The generally dry and nearly level lake plain that occupies the lowest parts of closed depressions, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff. Playa deposits are fine grained and may or may not have a high water table and saline conditions.

Plinthite

The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan

A compacted layer formed in the soil directly below the plowed layer.

Ponding

Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded

Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Pore linings

See Redoximorphic features.

Potential native plant community

See Climax plant community.

Potential rooting depth (effective rooting depth)

Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning

Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil

The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil

A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use

Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Rangeland

Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Reaction, soil

A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid: Less than 3.5
Extremely acid: 3.5 to 4.4
Very strongly acid: 4.5 to 5.0
Strongly acid: 5.1 to 5.5
Moderately acid: 5.6 to 6.0
Slightly acid: 6.1 to 6.5
Neutral: 6.6 to 7.3
Slightly alkaline: 7.4 to 7.8
Moderately alkaline: 7.9 to 8.4
Strongly alkaline: 8.5 to 9.0
Very strongly alkaline: 9.1 and higher

Red beds

Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations

See Redoximorphic features.

Redoximorphic depletions

See Redoximorphic features.

Redoximorphic features

Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they

form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:
   A. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; *and*
   B. Masses, which are noncemented concentrations of substances within the soil matrix; *and*
   C. Pore linings, i.e., zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.
2. Redoximorphic depletions.—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:
   A. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix; *and*
   B. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).
3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix

See Redoximorphic features.

Regolith

All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief

The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material)

Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Rill

A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riser

The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

Road cut

A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments

Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop (map symbol)

An exposure of bedrock at the surface of the earth. Not used where the named soils of the surrounding map unit are shallow over bedrock or where “Rock outcrop” is a named component of the map unit.

Root zone

The part of the soil that can be penetrated by plant roots.

Runoff

The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil

A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Saline spot (map symbol)

An area where the surface layer has an electrical conductivity of 8 mmhos/cm more than the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has an electrical conductivity of 2 mmhos/cm or less.

Sand

As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone

Sedimentary rock containing dominantly sand-sized particles.

Sandy spot (map symbol)

A spot where the surface layer is loamy fine sand or coarser in areas where the surface layer of the named soils in the surrounding map unit is very fine sandy loam or finer.

Sapric soil material (muck)

The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturated hydraulic conductivity (Ksat)

The ease with which pores of a saturated soil transmit water. Formally, the proportionality coefficient that expresses the relationship of the rate of water movement to hydraulic gradient in Darcy's Law, a law that describes the rate of water movement through porous media. Commonly abbreviated as "Ksat." Terms describing saturated hydraulic conductivity are:

Very high: 100 or more micrometers per second (14.17 or more inches per hour)

High: 10 to 100 micrometers per second (1.417 to 14.17 inches per hour)

Moderately high: 1 to 10 micrometers per second (0.1417 inch to 1.417 inches per hour)

Moderately low: 0.1 to 1 micrometer per second (0.01417 to 0.1417 inch per hour)

Low: 0.01 to 0.1 micrometer per second (0.001417 to 0.01417 inch per hour)

Very low: Less than 0.01 micrometer per second (less than 0.001417 inch per hour).

To convert inches per hour to micrometers per second, multiply inches per hour by 7.0572. To convert micrometers per second to inches per hour, multiply micrometers per second by 0.1417.

Saturation

Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification

The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Sedimentary rock

A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

Sequum

A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil

A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Severely eroded spot (map symbol)

An area where, on the average, 75 percent or more of the original surface layer has been lost because of accelerated erosion. Not used in map units in which “severely eroded,”“very severely eroded,” or “gullied” is part of the map unit name.

Shale

Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.

Sheet erosion

The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Short, steep slope (map symbol)

A narrow area of soil having slopes that are at least two slope classes steeper than the slope class of the surrounding map unit.

Shoulder

The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.

Shrink-swell

The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Shrub-coppice dune

A small, streamlined dune that forms around brush and clump vegetation.

Side slope (geomorphology)

A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

Silica

A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio

The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt

As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone

An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.

Similar soils

Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole (map symbol)

A closed, circular or elliptical depression, commonly funnel shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock (e.g., limestone, gypsum, or salt) or by collapse of underlying caves within bedrock. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.

Site index

A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides (pedogenic)

Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

Slide or slip (map symbol)

A prominent landform scar or ridge caused by fairly recent mass movement or descent of earthy material resulting from failure of earth or rock under shear stress along one or several surfaces.

Slope

The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope alluvium

Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds

and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Slow refill

The slow filling of ponds, resulting from restricted water transmission in the soil.

Slow water movement

Restricted downward movement of water through the soil. See Saturated hydraulic conductivity.

Sodic (alkali) soil

A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodic spot (map symbol)

An area where the surface layer has a sodium adsorption ratio that is at least 10 more than that of the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has a sodium adsorption ratio of 5 or less.

Sodicity

The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^{+} to Ca^{++} + Mg^{++}. The degrees of sodicity and their respective ratios are:

Slight: Less than 13:1

Moderate: 13-30:1

Strong: More than 30:1

Sodium adsorption ratio (SAR)

A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

Soft bedrock

Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil

A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil separates

Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand: 2.0 to 1.0
Coarse sand: 1.0 to 0.5
Medium sand: 0.5 to 0.25
Fine sand: 0.25 to 0.10
Very fine sand: 0.10 to 0.05
Silt: 0.05 to 0.002
Clay: Less than 0.002

Solum

The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Spoil area (map symbol)

A pile of earthy materials, either smoothed or uneven, resulting from human activity.

Stone line

In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

Stones

Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony

Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stony spot (map symbol)

A spot where 0.01 to 0.1 percent of the soil surface is covered by rock fragments that are more than 10 inches in diameter in areas where the surrounding soil has no surface stones.

Strath terrace

A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).

Stream terrace

One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents

the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

Stripcropping

Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil

The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are:

Platy: Flat and laminated

Prismatic: Vertically elongated and having flat tops

Columnar: Vertically elongated and having rounded tops

Angular blocky: Having faces that intersect at sharp angles (planes)

Subangular blocky: Having subrounded and planar faces (no sharp angles)

Granular: Small structural units with curved or very irregular faces

Structureless soil horizons are defined as follows:

Single grained: Entirely noncoherent (each grain by itself), as in loose sand

Massive: Occurring as a coherent mass

Stubble mulch

Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil

Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling

Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum

The part of the soil below the solum.

Subsurface layer

Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow

The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit

The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer

The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Surface soil

The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Talus

Rock fragments of any size or shape (commonly coarse and angular) derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose broken rock formed chiefly by falling, rolling, or sliding.

Taxadjuncts

Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terminal moraine

An end moraine that marks the farthest advance of a glacier. It typically has the form of a massive arcuate or concentric ridge, or complex of ridges, and is underlain by till and other types of drift.

Terrace (conservation)

An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geomorphology)

A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.

Terracettes

Small, irregular steplike forms on steep hillslopes, especially in pasture, formed by creep or erosion of surficial materials that may be induced or enhanced by trampling of livestock, such as sheep or cattle.

Texture, soil

The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,”“fine,” or “very fine.”

Thin layer

Otherwise suitable soil material that is too thin for the specified use.

Till

Dominantly unsorted and nonstratified drift, generally unconsolidated and deposited directly by a glacier without subsequent reworking by meltwater, and consisting of a heterogeneous mixture of clay, silt, sand, gravel, stones, and boulders; rock fragments of various lithologies are embedded within a finer matrix that can range from clay to sandy loam.

Till plain

An extensive area of level to gently undulating soils underlain predominantly by till and bounded at the distal end by subordinate recessional or end moraines.

Tilth, soil

The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope

The gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil

The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements

Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread

The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Tuff

A generic term for any consolidated or cemented deposit that is 50 percent or more volcanic ash.

Upland

An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.

Valley fill

The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.

Variegation

Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve

A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Very stony spot (map symbol)

A spot where 0.1 to 3.0 percent of the soil surface is covered by rock fragments that are more than 10 inches in diameter in areas where the surface of the surrounding soil is covered by less than 0.01 percent stones.

Water bars

Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering

All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded

Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wet spot (map symbol)

A somewhat poorly drained to very poorly drained area that is at least two drainage classes wetter than the named soils in the surrounding map unit.

Wilting point (or permanent wilting point)

The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow

The uprooting and tipping over of trees by the wind.

Land Evaluation Worksheet

Land Capability Classification (LCC) and Storie Index Scores

A	B	C	D	E	F	G	H
Soil Map Unit	Project Acres	Proportion of Project Area	LCC	LCC Rating	LCC Score	Storie Index	Storie Index Score
107	148	13%	4e	50	6	40	5
110	114	10%	3e	70	7	20	2
111	107	9%	4e	50	5	20	2
125	99	8%	4e	50	4	20	2
135	201	17%	4e	50	9	80	14
407nk	495	43%	4e	50	21	40	17
Totals	**1163**	**100%**		**LCC Total Score**	**52**	**Storie Index Total Score**	**41**

Site Assessment Worksheet 1.

Project Size Score

	I	J	K
	LCC Class I - II	LCC Class III	LCC Class IV - VIII
			148
		114	
			107
			99
			201
			495
Total Acres	**0**	**114**	**1049**
Project Size	**0**	**80**	**100**

Highest Project Size Score **100**

Site Assessment Worksheet 2. - Water Resources Availability

A	B	C	D	E
Project Portion	Water Source	Proportion of Project Area	Water Availability Score	Weighted Availability Score (C x D)
1	DRY LAND	100%	35	35
2				
3				
4				
5				
6				
		100%	**Total Water Resource Score**	**35**

Site Assessment Worksheet 3.
Surrounding Agricultural Land and Surrounding Protected Resource Land

A	B	C	D	E	F	G
Zone of Influence						
Total Acres	Acres in Agriculture	Acres of Protected Resource Land	Percent in Agriculture (A/B)	Percent Protected Resource Land (A/C)	Surrounding Agricultural Land Score (From Table)	Surrounding Protected Resource Land Score (From Table)
4425	1697	3896	38%	88%	**30**	**95**

Final LESA Score Sheet

	Factor Scores	Factor Weight	Weighted Factor Scores
LE Factors			
Land Capability Classification	52	0.25	13
Storie Index	41	0.25	10
LE Subtotal		**0.5**	**23**
SA Factors			
Project Size	100	0.15	15
Water Resource Availability	35	0.15	5
Surrounding Agricultural Land	30	0.15	5
Protected Resource Land	95	0.05	5
SA Subtotal		**0.5**	**30**
		Final LESA Score	**53**

Appendix G

Tulare County Board of Supervisors
Adopted Resolutions,
Agricultural Zone Land Uses

BEFORE THE BOARD OF SUPERVISORS
COUNTY OF TULARE, STATE OF CALIFORNIA

IN THE MATTER OF ESTABLISHING CRITERIA	)
FOR PUBLIC AND PRIVATE UTILITY STRUCTURES	)**RESOLUTION NO. 2010-0717**
PROPOSED ON AGRICULTURAL ZONED	)
LANDS AND LANDS UNDER WILLIAMSON	)
ACT CONTRACTS	)

UPON MOTION OF SUPERVISOR ISHIDA, SECONDED BY SUPERVISOR ENNIS, THE FOLLOWING WAS ADOPTED BY THE BOARD OF SUPERVISORS, AT AN OFFICIAL MEETING HELD AUGUST 31, 2010, BY THE FOLLOWING VOTE:

AYES: SUPERVISORS ISHIDA, VANDER POEL, WORTHLEY AND ENNIS
NOES: SUPERVISOR COX
ABSTAIN: NONE
ABSENT: NONE

ATTEST: JEAN M. ROUSSEAU
COUNTY ADMINISTRATIVE OFFICER/
CLERK, BOARD OF SUPERVISORS

BY: Denise A. Ybarra
Deputy Clerk

* * * * * * * * * * * * * * * * * * * *

1. Received recommendations of the Agricultural Advisory Committee and Planning Commission.

2. Adopted Criteria for Public and Private Utility Structures located on Agricultural Zoned Lands and lands under Williamson Act Contracts.

   Level I: Agricultural Zoned Lands.

   a.) Not necessarily support the public and private utility structures on prime farmlands as defined by the State Farmland Mapping and Monitoring Program (FMMP).

   b.) Analyze the coverage of the proposed public and private utility structures on the agricultural zoned lands and their operations.

c.) Public and private utility structures on non-prime farmlands may be permitted subject to findings and conditions.

d.) Require developer agreements that include cost recovery, loss of crop production and/or subvention funds, removal of facility and reclamation requirements, and other Tulare County financial incentives.

e.) Desired locations to be in proximity to the electrical grid/corridor/electrical substation.

f.) Water readily availability analysis for agricultural operations. Surface, well, irrigation canal, transfer of water to another site.

g.) CEQA findings – Temporary Use – Loss of Agricultural production or operations.

h.) Rural Valley Lands Plan analysis does not apply.

Level II: Agricultural Zoned Lands under Williamson Act Contracts.

a.) All criteria noted above in Level I to be completed.

b.) Review Resolution No. 89-1275 – Uniform Rules for Agricultural Preserves and Resolution No. 99-0620 establishing Rules for Farmland Security Zones to insure compatibility.

c.) Review Williamson Act Contract Contents to insure compatibility.

RMA
TCRMA –Flood/Subdivisions/Surveyor/Permits Division
TCRMA – Building Division
TCHHSA – Environmental Health Services Division
TCRMA – Airport Land Use Commission
TCRMA – Countywide Planning Division
TC Fire Department
TCRMA – Solid Waste Division
TCRMA – Agricultural Commissioner
TCFB – Tulare County Farm Bureau
TCAAC – Tulare County Agricultural Advisory Committee

DAY
8/31/10

BEFORE THE BOARD OF SUPERVISORS
COUNTY OF TULARE, STATE OF CALIFORNIA

IN THE MATTER OF COMPATIBILITY FOR) PUBLIC AND PRIVATE UTILITY STRUCTURES) LOCATED ON AGRICULTURAL ZONED) LANDS AND LANDS UNDER WILLIAMSON) ACT CONTRACTS)	**RESOLUTION NO. 2010-0591**

UPON MOTION OF SUPERVISOR COX, SECONDED BY SUPERVISOR VANDER POEL, THE FOLLOWING WAS ADOPTED BY THE BOARD OF SUPERVISORS, AT AN OFFICIAL MEETING HELD JULY 13, 2010, BY THE FOLLOWING VOTE:

AYES: SUPERVISORS ISHIDA, VANDER POEL, COX AND ENNIS
NOES: NONE
ABSTAIN: NONE
ABSENT: SUPERVISOR WORTHLEY

ATTEST: JEAN M. ROUSSEAU
COUNTY ADMINISTRATIVE OFFICER/
CLERK, BOARD OF SUPERVISORS

BY: Denise A. Ybarra
Deputy Clerk

1. Received Staff Report, Presentation and Directed Staff to prepare criteria considerations for Public and Private Utility Structures located on Agricultural Zoned Lands and refer to Agricultural Advisory Committee and Planning Commission for recommendation to the Board.

2. Accepted the two tier process concept for public and private utility applications on agricultural zoned lands.

   First level of review. Where public and private utility structures are located on non Williamson Act contracted lands subject to a Special Use Permit and Developer Agreement.

   Second level of review. Where public and private utility structures are located on Williamson Act Contracted lands subject to a Special Use Permit, and Developer Agreement and findings of compatibility.

RMA

DAY
7/14/10

BEFORE THE BOARD OF SUPERVISORS
COUNTY OF TULARE, STATE OF CALIFORNIA

IN THE MATTER OF	)	
AMENDMENT TO RESOLUTION	)	**RESOLUTION NO. 2010-0590**
INTERPRETATION TO TULARE COUNTY	)	
ZONING ORDINANCE NO. 352	)	

UPON MOTION OF SUPERVISOR ISHIDA, SECONDED BY SUPERVISOR VANDER POEL, THE FOLLOWING WAS ADOPTED BY THE BOARD OF SUPERVISORS, AT AN OFFICIAL MEETING HELD JULY 13, 2010, BY THE FOLLOWING VOTE:

AYES: SUPERVISORS ISHIDA, VANDER POEL, COX AND ENNIS
NOES: NONE
ABSTAIN: NONE
ABSENT: SUPERVISOR WORTHLEY

ATTEST: JEAN M. ROUSSEAU
COUNTY ADMINISTRATIVE OFFICER
CLERK, BOARD OF SUPERVISORS

BY: Denise A. Ybarra
Deputy Clerk

Amended Resolution No. 2010-0458 to include Agricultural Zone Districts in the Solar and Wind Electrical Generation Facilities of Tulare County Zoning Ordinance No. 352.

RMA
Ag. Advisory Comm.

DAY
7/14/10

BEFORE THE BOARD OF SUPERVISORS
COUNTY OF TULARE, STATE OF CALIFORNIA

IN THE MATTER OF INTERPRETATION	)	
TO THE TULARE COUNTY ZONING	)	
ORDINANCE NO. 352 FOR SOLAR	)	**RESOLUTION NO. 2010-0458**
AND WIND ELECTRICAL GENERATION	)	
FACILITIES, COUNTY WIDE	)	

UPON MOTION OF SUPERVISOR COX, SECONDED BY SUPERVISOR ENNIS, THE FOLLOWING WAS ADOPTED BY THE BOARD OF SUPERVISORS, AT AN OFFICIAL MEETING HELD JUNE 8, 2010, BY THE FOLLOWING VOTE:

AYES: SUPERVISORS ISHIDA, VANDER POEL, COX, WORTHLEY AND ENNIS
NOES: NONE
ABSTAIN: NONE
ABSENT: NONE

ATTEST: JEAN M. ROUSSEAU
COUNTY ADMINISTRATIVE OFFICER
CLERK, BOARD OF SUPERVISORS

BY: Denise A. Ybarra
Deputy Clerk

1. Adopted zoning interpretation that Solar and Wind Electrical Generation Facilities are included within the meaning of Public and Private Utility Structures and that said facilities, where a Special Use Permit is required, shall be subject to a Development Agreement. Agricultural Zone Districts are excluded from this interpretation.
2. Accepted the Resource Management Agency's three tier processing for Public and Private Utility applications:
   Tier 1. Where a solar or wind electrical generating facility is designed for on-site consumption, the facility shall be considered an accessory use and permitted by right.
   Tier 2. Where a solar and wind electrical generating facility is designed for on-site consumption and excess generation is for sale, the use shall be subject to a Special Use Permit and Development Agreement.
   Tier 3. Where a solar and wind electrical generating facility is designed for sale, the use shall be subject to a Special Use Permit and Development Agreement.

RMA
Fire
Ag. Comm.

DAY
6/09/10

BEFORE THE BOARD OF SUPERVISORS
COUNTY OF TULARE, STATE OF CALIFORNIA
AND WIND ELECTRICAL GENERATION
FACILITIES, COUNTY WIDE
IN THE MATTER OF INTERPRETATION
TO THE TULARE COUNTY ZONING
ORDINANCE NO. 352 FOR SOLAR RESOLUTION NO. 2010-0458
UPON MOTION OF SUPERVISOR COX, SECONDED BY SUPERVISOR
ENNIS, THE FOLLOWING WAS ADOPTED BY THE BOARD OF SUPERVISORS, AT
AN OFFICIAL MEETING HELD JUNE 8, 2010, BY THE FOLLOWING VOTE:
AYES:
NOES:
ABSTAIN:
ABSENT:
SUPERVISORS ISHIDA, VANDER POEL, COX, WORTHLEY
AND ENNIS
NONE
NONE
NONE
ATTEST: JEAN M. ROUSSEAU
COUNTY ADMINISTRATIVE OFFICER
CI,ZRK, BOARD OF SUPERVISORS
BY:
Deputy le
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consumption and excess generation is for sale, the use shall be subject to a Special
Use Permit and Development Agreement.
Tier 3. Where a solar and wind electrical generating facility is designed for sale, the
use shall be subject to a Special Use Permit and Development Agreement.
RMA
Fire
Ag. Comm.
DAY

RESOURCE MANAGEMENT AGENCY
COUNTY OF TULARE
AGENDA ITEM

AGENDA DATE: June 8, 2010 – **REVISED**

Public Hearing Required	Yes ☐	No ☒	N/A ☐
Scheduled Public Hearing w/Clerk	Yes ☐	No ☒	N/A ☐
Published Notice Required	Yes ☐	No ☒	N/A ☐
Advertised Published Notice	Yes ☐	No ☒	N/A ☐
Meet & Confer Required	Yes ☐	No ☒	N/A ☐
Electronic file(s) has been sent	Yes ☒	No ☐	N/A ☐
Budget Transfer (Aud 308) attached	Yes ☐	No ☐	N/A ☒
Personnel Resolution attached	Yes ☐	No ☐	N/A ☒
Resolution, Ordinance or Agreements are attached and signature line for Chairman is marked with tab(s)/flag(s)	Yes ☒	No ☐	N/A ☐

CONTACT PERSON: Celeste Perez PHONE: (559) 624-7000

SUBJECT: Interpretation to the Tulare County Zoning Ordinance No. 352 for Solar and Wind Electrical Generation Facilities, County Wide

REQUEST(S):

That the Board of Supervisors:

1. Adopt zoning interpretation that Solar and Wind Electrical Generation Facilities are included within the meaning of Public and Private Utility Structures and that said facilities, where a Special Use Permit is required, shall be subject to a Development Agreement.
2. Accept the Resource Management Agency's three tier processing for Public and Private Utility applications:
   Tier 1. Where a solar or wind electrical generating facility is designed for on-site consumption, the facility shall be considered an accessory use and permitted by right.
   Tier 2. Where a solar and wind electrical generating facility is designed for on-site consumption and excess generation is for sale, the use shall be subject to a Special Use Permit and Development Agreement.
   Tier 3. Where a solar and wind electrical generating facility is designed for sale, the use shall be subject to a Special Use Permit and Development Agreement.

SUMMARY:

The proposed zoning interpretation would permit solar and wind electrical

BOARD OF SUPERVISORS
RESOURCE MANAGEMENT
AGENCY
COUNTY OF TULARE
AGENDA ITEM
ALLEN ISHIDA
District One
PETE VANDER POEL
District Two
PHILLIP A. COX
District Three
J. STEVEN WORTHLEY
District Four
MIKE ENNIS
District Five
AGENDA DATE: June 8, 2010 REVISED
Public Hearing Required Yes No Z N/A
Scheduled Public Hearing w/Clerk Yes No Z N/A
Published Notice Required Yes No Z N/A
Advertised Published Notice Yes No Z N/A
Meet & Confer Required Yes No Z N/A
Electronic file(s) has been sent Yes Z No N/A
Budget Transfer Aud 308) attached Yes No N/A Z
Personnel Resolution attached Yes No N/A Z
Resolution, Ordinance or Agreements are attached and signature line for Chairman is marked with tab(s)/flag(s) Yes Z No N/A
CONTACT PERSON: Celeste Perez PHONE: 559) 624-7000
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That the Board of Supervisors:
1. Adopt zoning interpretation that Solar and Wind Electrical Generation Facilities are included within the meaning of Public and Private Utility Structures and that said facilities, where a Special Use Permit is required, shall be subject to a Development Agreement.
2. Accept the Resource Management Agency's three tier processing for Public and Private Utility applications:
Tier 1. Where a solar or wind electrical generating facility is designed for on-site consumption, the facility shall be considered an accessory use and permitted by right.
Tier 2. Where a solar and wind electrical generating facility is designed for on-site consumption and excess generation is for sale, the use shall be

subject to a Special Use Permit and Development Agreement.
Tier 3. Where a solar and wind electrical generating facility is designed for sale, the use shall be subject to a Special Use Permit and Development Agreement.
SUMMARY:
The proposed zoning interpretation would permit solar and wind electrical

generation facilities in all zone districts permitting Public and Private Utility Facilities Public Utility Structures subject to a Special Use Permit and Development Agreement. Exceptions to this requirement include: (1) Public Utility Facilities preempted by State and/or Federal Law; and (2) A Public Utility Facility designed and used for on-site consumption.

The research conducted by Resource Management Agency (RMA) staff in support of the zoning interpretation is contained in Exhibit A. In summary 23, Zone Districts permit Public Utility Structures by Special Use Permit. The existing General Plan and the Draft General Plan contain Goals and Policies Supporting alternative energy programs. The State of California Solar Initiative and Funding encourages the use of alternative energy facilities. The approval of the requested zoning interpretation would expand the definition of Public Utility Structures to include solar and wind facilities.

Resource Management Agency has 11 Special Use Permit Applications for Solar facilities filed which are being processed on the assumption that such use is a Public Utility Facility as defined by Tulare County Zoning Code.

ZONING INTERPRETATION AND APPLICATION:

RMA Planning staff has responded to the requested Special Use Permit Applications for Solar electrical generation facilities and has engaged both the Tulare County Farm Bureau and Tulare County Agricultural Advisory Committee regarding these electrical generation facilities being located on agricultural lands. The State of California Department of Conservation has produced an opinion paper relating to the placement of Public Utility Facilities on Williamson Act Contracted lands.

The proposed entitlement process is three tiered:

Tier 1. Where a solar or wind electrical generating facility is designed for on-site consumption, the facility shall be considered an accessory use and permitted by right.
Tier 2. Where a solar and wind electrical generating facility is designed for on-site consumption and excess generation is for sale, the use shall be subject to a Special Use Permit and Development Agreement.
Tier 3. Where a solar and wind electrical generating facility is designed for sale, the use shall be subject to a Special Use Permit and Development Agreement.

Note: Application of this zoning interpretation is further expanded and defined in a separate action when such Public Utility Facility is proposed to be located on prime or non-prime agricultural lands as well as lands under Williamson Act Contracts or Farmland Security Zones.

SUBJECT: Interpretation to the Tulare County Zoning Ordinance No. 352 for Solar and Wind Electrical Generation Facilities, County Wide
DATE: June 8, 2010
generation facilities in all zone districts permitting Public and Private Utility Facilities Public Utility Structures subject to a Special Use Permit and Development Agreement. Exceptions to this requirement include: 1) Public Utility Facilities preempted by State and/or Federal Law; and 2) A Public Utility Facility designed and used for on-site consumption.
The research conducted by Resource Management Agency RMA) staff in support of the zoning interpretation is contained in Exhibit A. In summary 23, Zone Districts permit Public Utility Structures by Special Use Permit. The existing General Plan and the Draft General Plan contain Goals and Policies Supporting alternative energy programs. The State of California Solar Initiative and Funding encourages the use of alternative energy facilities. The approval of the requested zoning interpretation would expand the definition of Public Utility Structures to include solar and wind facilities.
Resource Management Agency has 11 Special Use Permit Applications for Solar facilities filed which are being processed on the assumption that such use is a Public Utility Facility as defined by Tulare County Zoning Code.
ZONING INTERPRETATION AND APPLICATION:
RMA Planning staff has responded to the requested Special Use Permit Applications for Solar electrical generation facilities and has engaged both the Tulare County Farm Bureau and Tulare County Agricultural Advisory Committee regarding these electrical generation facilities being located on agricultural lands.
The State of California Department of Conservation has produced an opinion paper relating to the placement of Public Utility Facilities on Williamson Act Contracted lands.
The proposed entitlement process is three tiered:
Tier 1. Where a solar or wind electrical generating facility is designed for on-site consumption, the facility shall be considered an accessory use and permitted by right.
Tier 2. Where a solar and wind electrical generating facility is designed for on-site consumption and excess generation is for sale, the use shall be subject to a Special Use Permit and Development Agreement.
Tier 3. Where a solar and wind electrical generating facility is designed for sale, the use shall be subject to a Special Use Permit and Development Agreement.
Note: Application of this zoning interpretation is further expanded and defined in a separate action when such Public Utility Facility is proposed to be located on prime or non-prime agricultural lands as well as lands under Williamson Act Contracts or Farmland Security Zones.
2

SUBJECT: Interpretation to the Tulare County Zoning Ordinance No. 352 for Solar and Wind Electrical Generation Facilities, County Wide

DATE: June 8, 2010

FISCAL IMPACT/FINANCING:

Initial costs associated with the processing of these Special Use Permits are paid by the applicant in the form of a $1,750 deposit. Subsequent costs, including staff time, are billed at the rate of $100 per hour.

LINKAGE TO THE COUNTY OF TULARE STRATEGIC BUSINESS PLAN:

The interpretation that solar and wind electrical generation facilities are included within the meaning of Public and Private Utility Structures aligns with the Economic Well-Being and Quality of Life initiatives by providing economic development opportunities and promoting natural resource management and the continued improvement of environmental quality.

ALTERNATIVES:

1. Find that solar and wind electrical generation facilities not be included as a Public and Private Utility Structures.
2. Table the item and send back to staff for additional research and direct RMA Staff to stop the processing of Special Use Permit Applications for Solar Facilities.

INVOLVEMENT OF OTHER DEPARTMENTS OR AGENCIES:

The Resource Management Agency Planning Branch referred the current batch of Special Use Permits for solar facilities to the follow departments and agencies for early comment:

TCRMA –Flood/Subdivisions/Surveyor/Permits Division
TCRMA – Building Division
TCHHSA – Environmental Health Services Division
TCRMA – Airport Land Use Commission
TCRMA – Countywide Planning Division
TC Fire Department
TCRMA – Solid Waste Division
TCRMA – Agricultural Commissioner
TCFB – Tulare County Farm Bureau
TCAAC – Tulare County Agricultural Advisory Committee
School Districts
Caltrans – District 6
Regional Water Quality Control Board District 5.
District Archaeologist
Department of Fish and Game
San Joaquin Valley Air Pollution Control District
Edison International
Southern California Gas Company

SUBJECT: Interpretation to the Tulare County Zoning Ordinance No. 352 for Solar and Wind Electrical Generation Facilities, County Wide
DATE: June 8, 2010
FISCAL IMPACT/FINANCING:
Initial costs associated with the processing of these Special Use Permits are paid by the applicant in the form of a $1,750 deposit. Subsequent costs, including staff time, are billed at the rate of $100 per hour.
LINKAGE TO THE COUNTY OF TULARE STRATEGIC BUSINESS PLAN:
The interpretation that solar and wind electrical generation facilities are included within the meaning of Public and Private Utility Structures aligns with the Economic Well-Being and Quality of Life initiatives by providing economic development opportunities and promoting natural resource management and the continued improvement of environmental quality.
ALTERNATIVES:
1. Find that solar and wind electrical generation facilities not be included as a Public and Private Utility Structures.
2. Table the item and send back to staff for additional research and direct RMA Staff to stop the processing of Special Use Permit Applications for Solar Facilities.
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The Resource Management Agency Planning Branch referred the current batch of Special Use Permits for solar facilities to the follow departments and agencies for early comment:
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TC Fire Department
TCRMA Solid Waste Division
TCRMA Agricultural Commissioner
TCFB Tulare County Farm Bureau
TCAAC Tulare County Agricultural Advisory Committee
School Districts
Caltrans District 6
Regional Water Quality Control Board District 5.
District Archaeologist
Department of Fish and Game
San Joaquin Valley Air Pollution Control District
Edison International
Southern California Gas Company
3

SUBJECT: Interpretation to the Tulare County Zoning Ordinance No. 352 for Solar and Wind Electrical Generation Facilities, County Wide

DATE: June 8, 2010

ADMINISTRATIVE SIGN-OFF:

_____

Jake Raper, Jr., AICP
RMA Director

cc: Auditor/Controller
County Counsel
County Administrative Office (2)

Attachment(s)

Exhibit A – Supporting Research and Analysis for zoning Interpretation
Attachment 1 – Solar facility locations General Zoning Map

SUBJECT: Interpretation to the Tulare County Zoning Ordinance No. 352 for Solar and Wind Electrical Generation Facilities, County Wide
DATE: June 8, 2010
ADMINISTRATIVE SIGN-OFF:
Jake Raper, Jr., AICP
RMA Director
cc: Auditor/Controller
County Counsel
County Administrative Office 2)
Attachment(s)
Exhibit A Supporting Research and Analysis for zoning Interpretation
Attachment 1 Solar facility locations General Zoning Map
4

BEFORE THE BOARD OF SUPERVISORS
COUNTY OF TULARE, STATE OF CALIFORNIA

IN THE MATTER OF	)	
ESTABLISHING RULES FOR	)	RESOLUTION NO. 99-0620
FARMLAND SECURITY ZONES	)	

WHEREAS, California Senate Bill 1182 (Chapter 353, Statutes of 1998) added Section 51296 to the Williamson Act, authorizing counties to establish Farmland Security Zones and execute contracts to restrict the use of agricultural lands; and

WHEREAS, on July 13, 1999 (by Resolution No. 99-0479), the Board of Supervisors established procedures for initiating, filing, and processing requests to establish Farmland Security Zones in Tulare County; and

WHEREAS, this Board wishes to establish rules for agricultural and compatible uses allowed in Farmland Security Zones.

NOW, THEREFORE, BE IT RESOLVED as follows:

A. The Board of Supervisors of the County of Tulare does hereby determine that the following uses are considered to be consistent with the intent of Senate Bill 1182 as set forth in Section 51296 of the California Government Code, and which may be carried on within any Farmland Security Zone:

RMA
Co.Cnsl.
Assessor
Auditor
CAO
FN 12904
3/24/99
c

Commercial Agricultural Uses

1. The growing and harvesting of fruit and nut trees, vines, vegetables, horticultural specialties, and timber.
2. The growing and harvesting of field crops including but not limited to grain and hay crops, floral crops, seed crops, fiber crops, and sod or forage.
3. The raising and slaughter of poultry and ratites, except when a Use Permit is required under No. 10 hereinbelow.

4. The raising and slaughter of rabbits and other similar fur-bearing animals, except when a Use Permit is required under No. 10 hereinbelow.
5. The raising of sheep, goats, horses, mules, swine, bovine animals and other similar domesticated quadrupeds, except when a Use Permit is required under No. 10 hereinbelow.
6. Aquaculture/fish farming operations for the raising as a crop but not including fishing clubs or fishing for members of the general public on a commercial basis.
7. Insecticulture and vermiculture.
8. Apiary and honey extraction plant.
9. Plant nursery, not including retail sales.
10. Commercial agricultural uses that are permitted after Special Use Permit approval (as per Ordinance 352, as amended), as follows:
    a. Mushroom growing.
    b. Feedlot for more than twenty-five (25) animals.
    c. Raising and slaughter of poultry based on the density or numbers of poultry set forth in the Zoning Ordinance.
    d. Raising and slaughter of ratites based on the density or numbers of ratites set forth in the Zoning Ordinance.
    e. Raising and slaughter of rabbits or other fur-bearing animals based on the density or numbers of animals set forth in the Zoning Ordinance.
    f. Raising of sheep, goats, horses, mules, swine, bovine animals or other similar domesticated quadrupeds based on the density or numbers of animals set forth in the Zoning Ordinance.
    g. Dairy (when more than 25 milking cows are on the property at any time).

B. The Board of Supervisors of the County of Tulare does hereby determine that the following uses are considered to be permitted as 'Compatible' Agricultural Uses, provided they are determined, on an individual case-by-case basis, to be consistent with the principles of compatibility set forth in Government Code Section 51238.1 (a) and (b):

Compatible Uses

1. Open space uses including, but not limited to, a scenic highway corridor, wildlife habitat area, salt pond, managed wetland area, or a submerged area, as defined as agricultural land by the Land Conservation Act of 1965, as amended.
2. Biomass fuel manufacture for personal use. Biomass fuel manufacture for commercial use shall also be permitted if incidental or accessory to the agricultural use of the site and if a use permit is approved.
3. The storage and/or handling of agricultural chemicals for on-farm, non-commercial use only.
4. Sale of agricultural products, including sale at roadside stands and from vehicles, if all of the agricultural products offered for sale at any time have been produced on the property where the sale is conducted or on other property owned, leased or operated by the same person who owns, leases or operates the property where the sale is conducted. As used in this paragraph, 'agricultural products' mean commodities produced for the purpose of food, fuel, and fiber, and also include feed for livestock and fowl and trees and plants grown for ornamental use, such as Christmas trees, but not a retail plant nursery.
5. Temporary landing of aircraft engaged in agricultural uses and the landing and storage of the property owner's aircraft that is used as part of said owner's agricultural operations.
6. One (1) single-family residence or mobilehome for the entire contiguous property owned by one (1) person, firm, partnership or corporation or owned jointly by more than one (1) person, firm, partnership, or corporation or any combination thereof. Such residence or mobilehome shall be occupied only by an owner of the property and his family or a lessee of the property and his family.
7. In addition to the residence allowed under paragraph 6 above, one (1) additional residence or mobilehome for each forty (40) acres in the entire

property. Such additional residences and mobilehomes shall be occupied only by relatives of the owner or lessee, by farmworkers, or by employees who work on the property and their families, provided that the total number of farmworkers and/or employees shall not exceed twelve (12) at any time without Special Use Permit approval. However, if the property is less than forty (40) acres in area and was of record at the time the Farmland Security Zone became applicable to the property, one (1) such residence or mobile-home may be constructed and used as a dwelling by the persons designated hereinabove. This paragraph shall not be interpreted to require the removal of any residence or mobilehome existing at the time the Farmland Security Zone became applicable to the property and which does not meet the density standards herein established provided that the residence or mobilehome is occupied by the persons designated herein and was established in accordance with all applicable building and zoning regulations.

8. Incidental and accessory structures and uses including barns, stables, coops, tank houses, storage tanks, wind machines, windmills, silos, and other farm buildings, private garages and carports, storehouses, garden structures, greenhouses, recreation rooms, storage and use of petroleum products, and kennels for private, noncommercial use.

9. Signs that pertain only to a permitted use on the property on which the the sign is situated or that pertain to the sale, lease, or rental of property or a structure or personal property located on the property. In addition, signs which are no larger than four (4) square feet in area and which pertain to producer and marketing associations and organizations with which the owner or lessee is affiliated are allowed.

10. Compatible agricultural uses that are permitted after Special Use Permit approval (as per Ordinance 352, as amended), as follows:

    a. Agricultural chemical experiment stations.

    b. Establishments for the curing, processing, packaging, packing, storage, and shipping of agricultural products, provided that all of said

agricultural products are grown on the same property or on other property owned, leased, or operated by the same person who owns, leases, or operates the property where the establishment is located. Such establishments include, but are not limited to, the following: Agricultural dehydrators; Feed mills; Fish smoking, curing, and canning; Olive and/or olive oil processing; and Wineries.

c. Agricultural service establishments primarily engaged in performing agricultural animal husbandry services or horticultural services to farmers and performing services to farmers or farm-related activities such as planting, harvesting, storage, hauling, and equipment repair and maintenance -- provided that such services performed are clearly incidental and secondary to the use of property for bona fide agricultural /farming purposes and don't change the agricultural character of the area thereof, that the agricultural service use (including any associated structures and/or outside storage areas) occupies no more than ten percent of the total area of the unit or contiguous units of property owned or leased by the operator (but not to exceed ten acres), that no sales of equipment or products is conducted on the premises as part of the operation, and that equipment used in the service is the same as that used as part of farming operations on the property.

d. Retail plant nursery incidental to a wholesale nursery, consisting of the retail sales of trees, shrubs, vines, flowers, or grasses propagated for transplanting or for use as stock for grafting as part of a whole-sale plant nursery operation, provided that the area dedicated to retail sales of non-plant stock accessory items necessary for propagation and grafting may be allowed in an area up to five (5) percent of the total square footage of the retail nursery site area.

e. Biomass fuel manufacture for commercial use which is incidental to or accessory to bona fide agricultural use of a site.

f. Farmworker Housing for more than 12 farmworkers and/or where the farmworker housing consists of manufactured homes, mobilehomes, or recreation vehicles.

g. The erection, construction, alteration or maintenance of gas, electric, water, communication, or agricultural laborer housing facilities, provided that insofar as such facilities require a Special Use Permit under the provisions of Ordinance 352, as presently in effect and as said provisions may be amended from time to time, and may be carried on when such Special Use Permit has been secured.

h. The installation and operation of asphalt batching plants and concrete batching plants on a temporary basis for producing asphalt or concrete to be used only for construction or repair of a road, building, or other project for the State, County, or political subdivision of the State. Such a batching plant may be placed within the FSZ or Agricultural Preserve upon the commencement of such a public project, and immediately after all asphalt or concrete work required for the project has been completed, the batching plant shall be completely removed from the Zone or Preserve, and the premises shall be restored to the conditions existing prior to the installation of the batching plant. No asphalt or concrete shall be produced by such a batching plant for sale to the general public or for any purposes whatsoever other than the construction of the public project which it is supplying.

C. Any uses specifically permitted by the Williamson Act, as amended from time to time, shall be allowed in Farmland Security Zones.

D. Because of the many factors which must be considered when issuing Special Use Permits, nothing in Sections A or B above shall be construed to obligate this Board to issue such a permit if one should be applied for in the future.

E. If the owner of the property within an agricultural preserve enters into a Farmland Security Zone contract pursuant to the Williamson Act, such property shall not be used for any purpose other than those which are authorized by these Rules.

F. All real property, improved and/or unimproved, which is shown on the latest adopted tax roll as a unit or as contiguous units and which is owned by the same person or persons, shall not be divided for the purpose of sale, lease, or financing after a Farmland Security Zone contract has been entered into between the owner or owners and the County except in compliance with this paragraph; and any such division of land which is not in compliance with this paragraph shall constitute an incompatible use. If the property is zoned AE-10, AE-20, AE-40, or AE-80, then such divisions of land may be made in conformity with the provisions of Tulare County Ordinance No. 352, as presently in effect and as said Ordinance may be amended from time to time, applicable to the specific zone in which said property is located, except that Section 15.D.2 of said Ordinance No. 352 shall not be applicable.

THE FOREGOING RESOLUTION was approved upon motion of Supervisor Sanders, seconded by Supervisor Worthley, at a regular meeting of the Board of Supervisors held on the 17th day of August, 1999, by the following vote:

AYES: Sanders, Richmond, Maze, Worthley, Maples
NOES: None
ABSTAIN: None
ABSENT: None

ATTEST: THOMAS F. CAMPANELLA
COUNTY ADMINISTRATIVE OFFICER/
CLERK, BOARD OF SUPERVISORS

BY Janice Cotton
Deputy Clerk

BOARD OF SUPERVISORS TULARE COUNTY, CAL.

* * * *

Mr. Scott Kuney
Young Wooldridge
1800 30th Street, 4th Floor
Bakersfield, CA 93301

Christopher Campbell
Baker Manock & Jenson
5260 North Palm Avenue, Fourth Floor
Fresno, CA 93704

Richard Moss
Provost & Prichard
130 N Garden Street
Visalia, CA 93291

Mike Wyant
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Ralph Friend
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Daryl Maas
daryl@maasenergy.com

Lyle Schlyer
LSchlyer@calgren.com

Pixley Town Council

BEFORE THE BOARD OF SUPERVISORS

COUNTY OF TULARE, STATE OF CALIFORNIA

IN THE MATTER OF ADOPTION OF UNIFORM RULES FOR AGRICULTURAL PRESERVES	)))	RESOLUTION NO. 89-1275

Upon the motion of Supervisor Gould, seconded by Supervisor Reed, the following Resolution was made, passed and adopted:

A. The Board of Supervisors of the County of Tulare does hereby determine that all of the following uses are either agricultural uses which are allowed under the Williamson Act, or are compatible with said agricultural uses as defined in Section 51201 of the Government Code, and may be carried on within the Preserve:

1. Permitted uses as follows:

   a. The growing and harvesting of field crops, fruit and nut trees, vines, vegetables, horticulture specialties, and timber.

   b. The operation of apiaries and honey extraction plants.

   c. The operation of a dairy so long as no more than twenty-five (25) cows are on the property at any time.

   d. The raising and slaughter of poultry, rabbits and other fur-bearing animals, except when a Use Permit is required under paragraph 4 hereinbelow.

   e. The raising and slaughter of sheep, goats, horses, mules, swine, bovine animals, and other similar domesticated quadrupeds, except when a Use Permit is required under paragraph 4 hereinbelow.

   f. Feedlot for twenty-five animals or less.

g. Agricultural service establishments primarily engaged in performing agricultural husbandry services or horticultural services to farmers.

h. Services to farmers or farm-related activities in planting, harvesting, storage, hauling, and equipment repair and maintenance.

i. Incidental and accessory structures and uses including barns, stables, coops, tank houses, storage tanks, windmachines, windmills, silos and other farm buildings, private garages and carports, guest houses, storehouses, garden structures, greenhouses, recreation rooms, and the storage of petroleum products.

j. Mobilehomes and residences for the owners and lessees of the property, and for housing farm employees who work on the property.

k. Mobilehomes and residences for use by non-paying guests of the owners or lessees of the property.

l. Any residence which is in existence on the date that the Williamson Act Contract is entered into may be rented or leased to persons even though they are not the owners or lessees of the agricultural property which is subject to the Contract and are not farm employees who work on such property, and there shall be no minimum acreage on the amount of property to be rented or leased with such residence. This subparagraph shall not apply to any residence that is constructed after the date that the Williamson Act Contract is entered into and it shall not be a compatible use to rent or lease such residences pursuant to this paragraph.

m. Plant nurseries.

n. Sale of agricultural products and feed for livestock and fowl, including sale at roadside stands, if more than

one-half (1/2) of the value of the products on hand for sale at any time has been produced on the property where the sale is conducted or other property owned by the same person.

o. Signs which pertain only to a permitted use on the property on which the sign is situated or which pertains to the sale, lease or rental of the property or a structure or personal property located on the property. In addition, signs which are no larger than four (4) square feet in area and which pertain to production and marketing associations and organizations with which the owner or lessee is affiliated, are allowed.

p. Temporary landing of helicopters engaged in agricultural uses.

q. The curing, processing, packaging, packing, storage and shipping of agricultural products.

r. The installation and operation of asphalt batching plants and concrete batching plants on a temporary basis for producing asphalt or concrete to be used only for construction or repair of a road, building, or other project for the State, County or political subdivision of the State. Such a batching plant may be placed within the Preserve upon the commencement of such a public project, and immediately after all asphalt or concrete work required for the project has been completed, the batching plant shall be completely removed from the Preserve and the premises shall be restored to the conditions existing prior to the installation of the batching plant. No asphalt or concrete shall be produced by such a batching plant for sale to the general public or for any purposes whatsoever other than the construction of the public project which it is supplying.

s. Fish farming operations.

t. Game preserves, public or private.

u. Biomass fuel manufacture for personal use.

2. If the property is zoned AE, AE-10, AE-20, AE-40, AE-80, A-1 or AF, any additional uses set forth in Subsection B of Sections 9.5, 9.55, 9.6, 9.7, 9.8 and 10.3, and Subsection C of Section 10, of Ordinance No. 352 as presently in effect and as said subsections may be amended from time to time, are deemed to be compatible uses.

3. If the property is zoned in classifications other than AE, AE-10, AE-20, AE-40, AE-80, A-1 or AF, all the uses set forth in Subsection B of Section 9.5, of Ordinance No. 352 as presently in effect and as said subsection may be amended from time to time, are deemed to be compatible uses.

4. If the property is zoned AE, AE-10, AE-20, AE-40, AE-80, A-1 or AF, all the uses which are permitted in the particular zone upon securing a Special Use Permit under the provisions of Ordinance No. 352 as presently in effect and as said provisions may be amended from time to time, are deemed to be compatible uses and may be carried on when such Special Use Permit has been secured. This paragraph refers to those Use Permits listed in paragraph B of Part II of Section 16 of Ordinance No. 352, and to those Use Permits listed in the section of said Ordinance applicable to the specific zone in which the Preserve is located; specifically, Subsection D of Sections 9.5 and 10.3, Subsection E of Sections 9.55, 9.6, 9.7 and 9.8, and paragraphs 2 and 3 of Subsection C of Section 10. If an Agricultural Preserve is located within a zoning classification something other than AE, AE-10, AE-20, AE-40, AE-80, A-1 or AF, then only those uses which are permitted in the AE Zone (Subsection D of Section 9.5) upon securing a Special Use Permit shall be deemed to be compatible uses.

5. The erection, construction, alteration or maintenance of gas, electric, water, and community utility facilities are also

determined to be compatible uses in the Preserve, provided that insofar as such facilities require a Special Use Permit under the provisions of Ordinance 352 as presently in effect and as said provisions may be amended from time to time, and may be carried on when such Special Use Permit has been secured.

B. Nothing within Section A above is intended to deprive the owner or any nonconforming use which they may have, or hereafter acquire, under the Zoning Laws of the State of California or the Zoning Ordinance of the County of Tulare. In addition, because of the many factors which must be considered when issuing Special Use Permits, nothing in said Section A shall be construed to obligate this Board to issue such a Permit if one should be applied for in the future.

C. If the owner of the property within this Preserve enters into a Contract pursuant to the Williamson Act, such property shall not be used for any purpose other than those which are authorized by these Uniform Rules.

D. The Board does further determine that a subdivision, as that term is defined in Section 2 of Ordinance No. 352 as presently in effect and as said Ordinance may be amended from time to time, is not a compatible use and may not be created in the Preserve.

E. All real property, improved and/or unimproved which is shown on the latest adopted tax roll as a unit or as contiguous units and which is owned by the same person or persons, shall not be divided for the purpose of sale, lease or financing after a Williamson Act Contract has been entered into between the owner or owners and the County except in compliance with this paragraph; and any such division of land which is not in compliance with this paragraph shall constitute an incompatible use. If the property is zoned AE, AE-10, AE-20, AE-40, AE-80, A-1 or AF, then such divisions of land may be made in conformity with the provisions of Tulare County Ordiance No. 352, as presently in effect and as said Ordinance may be amended from time to time, applicable to the specific zone in which said property is located. If the property is zoned something other than AE, AE-10, AE-20, AE-40, AE-80, A-1 or AF, then such divisions of land may only be

made in conformity with the provisions of Tulare County Ordinance No. 352, as presently in effect and as said Ordinance may be amended from time to time, applicable to the AE-10 Zone.

The foregoing resolution was adopted at a regular meeting of the Board of Supervisors on the 26th, day of September, 1989, by the following vote:

AYES: Supervisors Gould, Conway, Mangine, Swiney and Reed

NOES: None

ABSTAIN: None

ABSENT: None

Distribution:
Planning & Dev
Assessor
File 5670

9/27/89
mb

Appendix H

Traffic Investigation for
Tulare Solar Center

RUETTGERS & SCHULER
CIVIL ENGINEERS

1800 30th Street, Suite 260
Bakersfield, California 93301
Phone (661) 327-1969
Fax (661) 327-1993

February 13, 2013

486-02
Electronic Mail & U.S. Mail

Mr. Gary Franzen
Wellhead Renewable Energy, LLC
650 Bercut Drive, Suite C
Sacramento, CA 95811

REF: Traffic Investigation for Proposed Tulare Solar Center east of Delano, CA

Dear Mr. Franzen:

The purpose of this letter is to evaluate potential traffic impacts resulting from the construction and operation of a solar energy project (the Project) proposed by Wellhead Renewable Energy, LLC, in Tulare County, east of Delano. This evaluation includes a review of the proposed project trip generation for both the construction phase and normal operation, as well as an analysis of roadway and intersection capacities near the Project, and a description of the proposed trip distribution for the anticipated construction traffic.

The Project is a solar energy generation facility that employs photovoltaic ("PV") panels that absorb sunlight and directly produce electricity without use of heat transfer fluid or cooling water. The facility would operate year-round, producing electric power during daytime hours. The proposed schedule for construction is to begin grading and construction of the facility in 2013. Full build-out of the Project could occur over several years, or in a single year, with Project phases (e.g. multiple 10 or 20 MW phases or a single 80 MW phase) being completed on a schedule necessary to deliver electricity pursuant to the requirements of Power Purchase Agreements (PPAs) entered into with the contracting utility or utilities.

The facility would consist of:

- A solar field of PV panels mounted on steel support structures
- An electrical collection and inverter system that aggregates the output from the PV panels and converts the electricity from direct current (DC) to alternating current (AC)
- Intermediate transformers to convert and deliver medium-voltage AC electricity to substations

- One or more substations which will step up the voltage to a level necessary to match the utility grid

- Civil infrastructure including driveways, drainage design, and fencing

The project is located approximately ten miles east of the City of Delano, in Tulare County, as shown in Figure 1 and 2 attached. The Project site is located in Sections 14-15,22-29,32-36, of Township 24 South, Range 27 East of the Mount Diablo Meridian. The Assessor Parcel Numbers for the site are 339-100-07, 339-110-006, 339-110-10, 339-110-16, 339-140-01, 339-140-08, and 339-140-010. It is anticipated that primary access to the property site would be provided along State Route 65 north of State Route 155.

PROJECT TRIP GENERATION AND DISTRIBUTION

Construction Phase

Traffic generated during the construction phase will include personnel vehicles and heavy trucks delivering materials and construction equipment. The analysis shows the impacts of construction traffic accessing the project site from State Route 65 at the 12th Avenue and 24th Avenue intersections, as well as the intersection of State Route 65 and State Route 155. Trip generation estimates for construction traffic utilizing these roadways are presented in Table 1, and are based on a worst case scenario where the project is completed in a single phase as described in the project description provided.

Approximately 198 workers are expected to be on site daily during the peak of the construction operations. It is anticipated that workers will carpool to the site in both company and non-company vehicles; therefore, an occupancy rate of 1.5 persons per vehicle was used. The workers will commute to and from the Project site, resulting in approximately 330 daily personnel vehicle trips (combined inbound, outbound and associated mid-day trips). For purposes of this study, a conservative estimate was made that all worker trips will arrive and depart within the peak hour, which equates to 132 peak hour trips in both the AM and PM time frame. This rate includes three additional medium duty truck trips defined in the project description.

An estimate of 90 heavy trucks, both material and equipment, will enter and depart the Project site per day during the peak of construction/delivery operations. This will result in a total of 180 truck trips per day which equates to 306 passenger-car equivalent trips per day. Following Highway Capacity Manual guidelines, Exhibit 20-9, heavy truck volumes were converted to passenger-car equivalent volumes using a factor of 1.7 trips per day (assuming level terrain). It was assumed that these truck trips would enter and exit the Project site throughout the work day. To determine the peak hour, a conservative assumption of 20% of the total daily truck traffic was used (either AM or PM), which equates to approximately 31 peak hour truck trips in both the AM and PM time frame.

Table 1
Project Trip Generation – Construction Phase

Vehicle Type	Variable	ADT	AM Peak Hour Trips		PM Peak Hour Trips	
			In % Split/ Trips	Out % Split/ Trips	In % Split/ Trips	Out % Split/ Trips
Personnel	198[1] (Per Day)	330[2]	100% 132[2]	0% 0	0% 0	100% 132[2]
Heavy Truck	90[1] (Per Day)	306[3]	100% 31[3]	0% 0[3]	0% 0[3]	100% 31[3]
TOTAL		636	163	0	0	163

[1] Variables represent worst case scenario where project is completed in a single phase

[2] Includes medium truck trips & 1.5 workers/vehicle

[3] Represents passenger-car equivalent for heavy truck traffic per HCM Ex. 20-9 (Level Terrain)

The approximate directional distribution of construction traffic is shown in Table 2. Project traffic distribution is shown in Figure 4 attached.

Table 2
Project Trip Distribution and Assignment

Direction	Percentage	Description
North	20	State Route 65
East	5	State Route 155
South	50	State Route 65
West	25	State Route 65

Construction Access

At the time of the preparation of this report there are no detailed access or circulation plans prepared. However, during the preparation of access design and internal circulation a review of turning radii and other design considerations will be taken into account for the expected trucks which will be accessing the site. It is anticipated that primary access to the property site would be provided along Avenue 12 and 24, which connect to State Route 65 north of State Route 155.

Operation Phase

After construction is complete, the Project expects to have a maximum of ten employees on site on any given day to operate and maintain the solar facilities with occasional addition of maintenance vehicles. Operations and maintenance activities, such as module washing, are anticipated at regular intervals and will increase traffic to the site. Trip generation estimates for

traffic accessing the project site during normal operation and module washing activities are presented in Table 3.

Table 3
Project Trip Generation – Operation Phase

General Information			AM Peak Hour Trips		PM Peak Hour Trips	
Vehicle Type	Variable	ADT	In % Split/ Trips	Out % Split/ Trips	In % Split/ Trips	Out % Split/ Trips
Personnel	10 [1] (Per Day)	20	100% 10	0% 0	0% 0	100% 10
TOTAL	0	20	10	0	0	10

[1] Based on maximum estimated O&M personal

EXISTING TRAFFIC

Existing PM and AM peak hour turning movement volumes were field measured at the study intersections in September 2012. These volumes are shown in Figure 3 attached.

IMPACT ANALYSIS

Intersection LOS

An analysis was done to determine the level of service of the intersections during the construction phase of the project. The scope of intersections studied was determined using the guidelines in the Caltrans publication "Guide for the Preparation of Traffic Impact Studies", dated June 2001, which states that a facility is required to be analyzed when a project will generate more than 50 trips at a facility operating at or above a LOS C. Also taken into consideration for the scope of intersections, is the proximity to major transportation facilities. The peak hour of construction traffic was determined to be from 6:00-7:00 am in the morning and 4:00-5:00 pm in the afternoon, therefore these hours were analyzed in this evaluation. Tables 4a and 4b show the intersections which meet this criteria and the results of the analysis.

The operation and maintenance phase of the project generates considerably less traffic than the construction scenario, as shown in Table 3. Therefore, using the same criteria as the construction phase to determine the need to study roadway facilities, no analysis is required for the operational phase of the project.

Table 4a
Unsignalized Intersection Level of Service
PM Peak Hour

#	Intersection	Movement	2012	2012+ Project
1	SR 65 & Avenue 24	WB	A	C
2	SR 65 & Avenue 12	EB	A	B
		WB	A	C
3	SR 65 & SR 155	EB	B	B
		WB	B	C

Table 4b
Unsignalized Intersection Level of Service
AM Peak Hour

#	Intersection	Movement	2012	2012+ Project
1	SR 65 & Avenue 24	WB	A	A
2	SR 65 & Avenue 12	EB	A	A
		WB	A	A
3	SR 65 & SR 155	EB	B	B
		WB	B	B

Roadway Capacity

Table 5 contains roadway capacity data for roadway segments in the vicinity of the Project. A volume-to-capacity ratio (v/c) of greater than 0.80 corresponds to a LOS of less than C, as defined in the Highway Capacity Manual. The same guidelines used for intersection analysis from the Caltrans guidelines were used to determine the scope of roadways to perform analysis on. The analysis shown in Table 5 includes construction traffic only.

Table 5
Roadway Capacity

Street	2011[1]	2012[2]	Project Construction ADT	KCOG 2006	Existing Capacity	v/c (Ex) 2011	v/c (Ex) 2012+Proj Construction
SR 65 : South of SR 155	6000	6120	254	937	15000	0.40	0.42
SR 65 : North of SR 155	8100	8262	509	836	15000	0.54	0.58
SR 155 : West of SR 65	380	388	127	1419	15000	0.03	0.03
SR 155 : East of SR 65	180	184	25	1764	15000	0.01	0.01

[1]Published ADT data from Caltrans
[2] Growth rate of 2.00% used to grow 2011 volume to 2012.

All study roadway segments currently operate above a LOS C near the project site. With the addition of project construction traffic the roadway will continue to operate above LOS C.

In accordance with Caltrans guidelines, a traffic impact analysis of study roadway segments is not required during the operational phase, since the roadway segments utilized by the operational phase of the project currently operates at or above LOS C and the project will generate fewer than 50 peak hour trips during this phase.

CONCLUSION

Upon review of the Project and corresponding analysis, it is concluded that the Project will not create any significant impacts to any of the intersections or roadways anticipated to be used for the Project during both the operational and construction phases. Therefore, the proposed Project will result in less-than-significant traffic impacts.

Please contact me should you have any questions.

Very truly yours,

REGISTERED PROFESSIONAL ENGINEER
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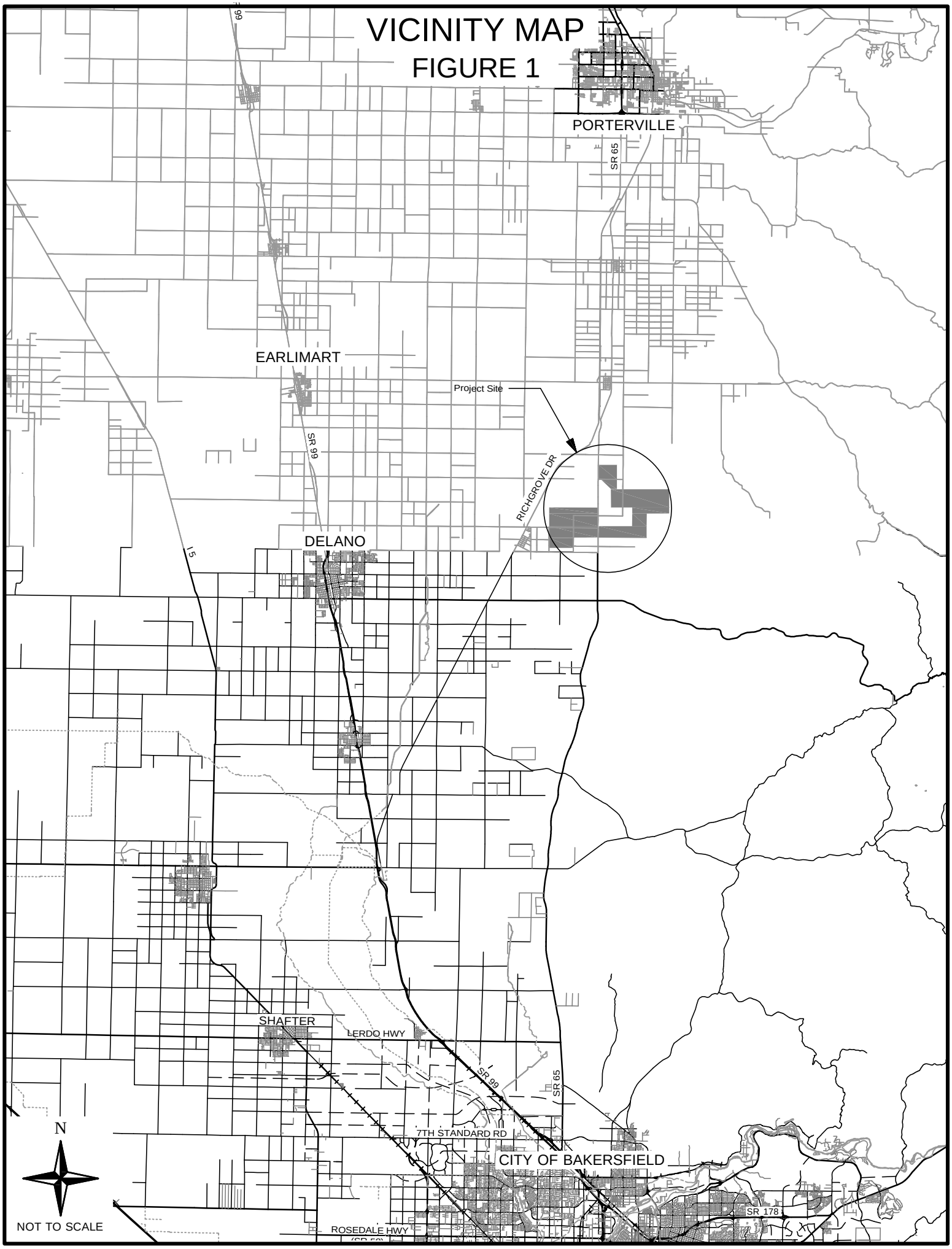
CIVIL
STATE OF CALIFORNIA

Ian J. Parks

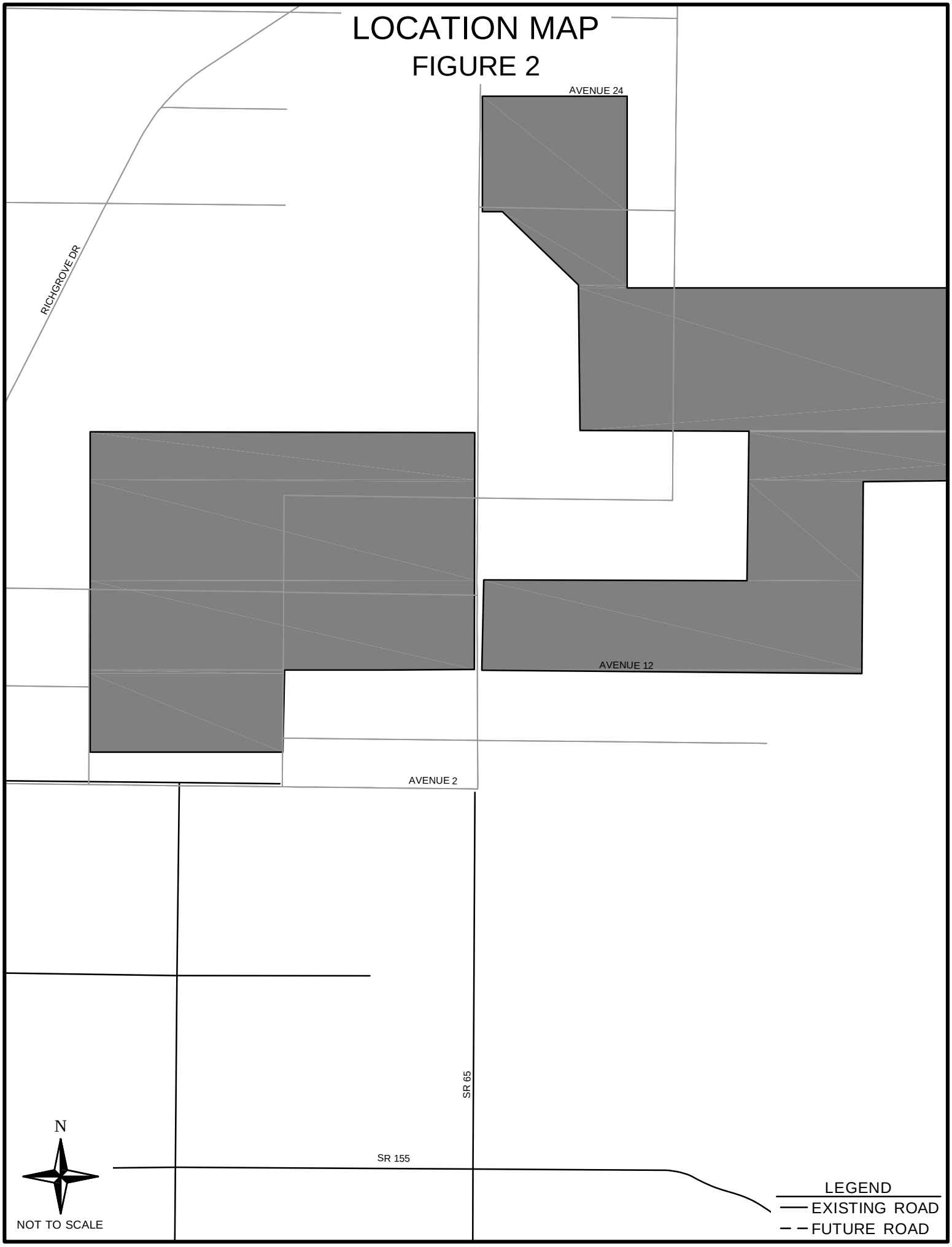
IJP/ma/bc

Attachments

VICINITY MAP
FIGURE 1

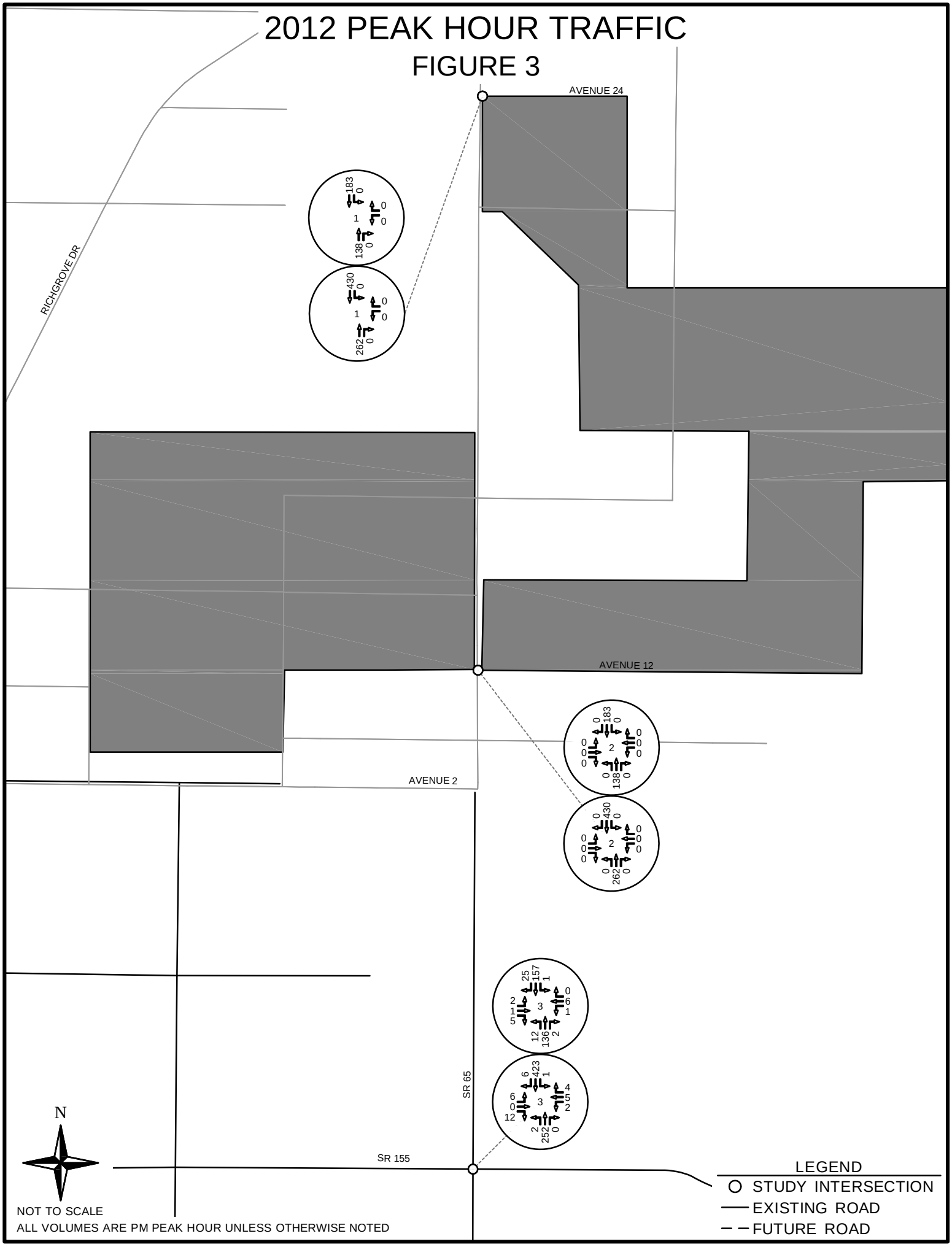


LOCATION MAP
FIGURE 2



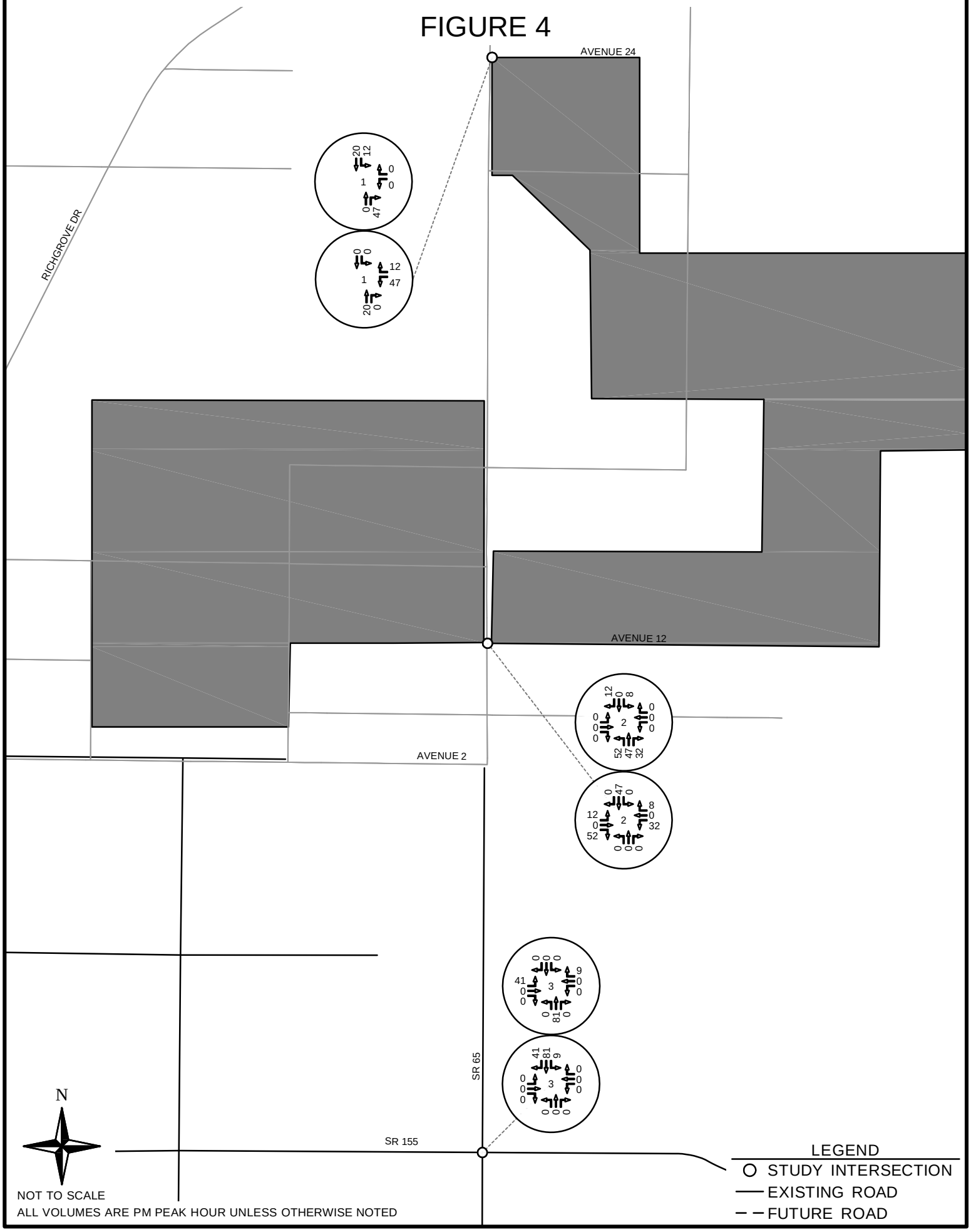
2012 PEAK HOUR TRAFFIC

FIGURE 3



PROJECT PEAK HOUR TRAFFIC

FIGURE 4



NOT TO SCALE

ALL VOLUMES ARE PM PEAK HOUR UNLESS OTHERWISE NOTED

2012+PROJECT PEAK HOUR TRAFFIC

FIGURE 5