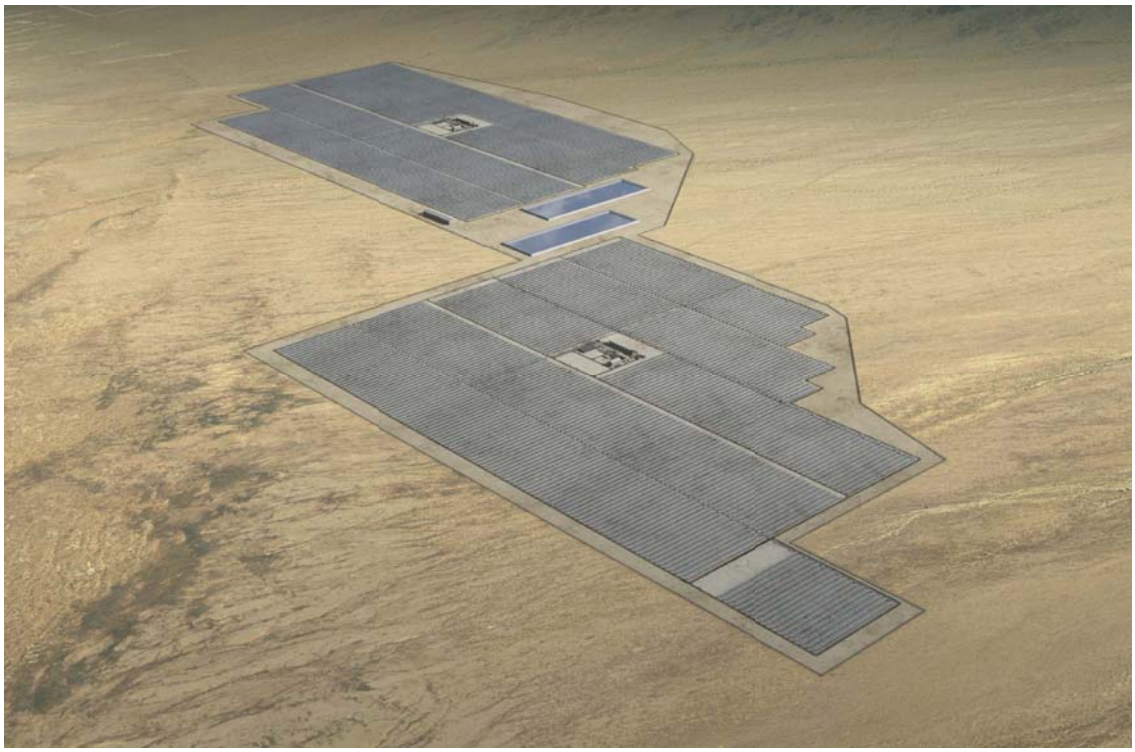
GENESIS SOLAR ENERGY PROJECT

Revised Staff Assessment Supplement



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GENESIS SOLAR ENERGY PROJECT (09-AFC-8)
REVISED STAFF ASSESSMENT SUPPLEMENT

EXECUTIVE SUMMARY

Testimony of Mike Monasmith

INTRODUCTION

Under state law, the California Energy Commission (Energy Commission) staff conducts an independent assessment of all solar thermal electrical generating facilities proposed for construction and operation within the state that are 50 megawatts and larger, including the Genesis Solar Energy Project (GSEP) Application for Certification (09-AFC-8).

The Revised Staff Assessment (RSA) for the GSEP was published on June 11, 2010. The RSA followed a Staff Assessment /Draft Environmental Impact Statement (SA/DEIS), which was a joint document published by the Energy Commission and the U.S. Bureau of Land Management (BLM) on March 26, 2010.

The SA/DEIS and RSA examined engineering, environmental, public health, and safety aspects of the GSEP, based on the information provided by the applicant, other sources and independent staff analyses normally contained in an Environmental Impact Report (EIR) required by the California Environmental Quality Act (CEQA).

During the comment period that followed the publication of the SA/DEIS, staff conducted five (5) workshops to discuss its findings, proposed mitigation, and proposed compliance-monitoring requirements. Based on the workshops and written comments, staff refined its analysis, corrected errors, and finalized conditions of certification to reflect areas where agreements have been reached with the parties; these results were included in the RSA.

Because of certain limitations on the availability of data related to several technical discussions, the June 11, 2010 Genesis RSA was not 100% complete, and its Executive Summary stipulated that a Supplement would be necessary. Accordingly, this Supplement contains augmented analyses for the following sections:

- **Biological Resources** (additional analysis to the RSA section released on June 11, 2010);
- **Cultural Resources** (complete RSA section, initially released and docketed on June 17, 2010);
- **Socioeconomics** (complete RSA section, released for the first time since the draft section of the SA/DEIS); and,
- **Transmission System Engineering** (Appendix A to the RSA section released on June 11, 2010).

These components of the Supplement -- when combined with the RSA -- complete staff's testimony for the Genesis Solar Energy Project.

PROPOSED PROJECT LOCATION AND DESCRIPTION

The GSEP is located approximately 25 miles west of the city of Blythe, California, on BLM-administered lands. The project area is south of the Palen/McCoy Wilderness Area and north of Ford Dry Lake and Interstate 10. The applicant is seeking a Right-of-Way grant with BLM for approximately 4,640 acres of lands. The Project area is located in east central Riverside County, where land use is characterized predominantly by open space and conservation and wilderness areas. The western portion of the county accounts for most of the developed area of the county, including urban areas and agricultural areas.

The Genesis project will utilize solar parabolic trough technology to generate electricity. With this technology, arrays of parabolic mirrors collect heat energy from the sun and refocus the radiation on a receiver tube located at the focal point of the parabola. A heat transfer fluid (HTF) is heated to high temperature (750°F) as it circulates through the receiver tubes. The heated HTF is then piped through a series of heat exchangers where it releases its stored heat to generate high pressure steam. The steam is then fed to a traditional steam turbine generator where electricity is produced.

PROPOSED PROJECT OBJECTIVES

The specific objectives of the Genesis Solar Energy Project are:

- To develop a utility-scale solar energy project utilizing parabolic trough technology;
- To construct and operate an environmentally friendly, economically sound, and operationally reliable solar power generation facility that will contribute to the State of California's renewable energy goals;
- To locate GSEP in an area with high solar insolation (high intensity solar energy);
- To interconnect directly to the California Independent System Operator (CAISO) grid through the Blythe Energy Project Transmission Line (BEPTL) and the Southern California Edison (SCE) electrical transmission system; and
- To fulfill Governor Schwarzenegger's and Interior Secretary Salazar's Memorandum of Understanding to expedite renewable energy development in California.

SUPPORT FOR PROPOSED PROJECT

The Federal government and the State of California have established the need for the nation and state to increase the development and use of renewable energy in order to enhance the nation's energy independence, meet environmental goals, and create new economic and employment growth opportunities.

The Genesis Solar Energy Project would help meet these national and state renewable energy needs by:

- Assisting California in meeting its Renewable Portfolio Standard goals of 20 percent of retail electric power sales by 2010 under existing law (Senate Bill 1078 – Chapter 516, Statutes of 2002);

- Supporting U.S. Secretary of the Interior Salazar's Orders 3283 and 3285 making the production, development and delivery of renewable energy top priorities for the United States;
- Supporting Governor Schwarzenegger's Executive Order S-14-08 to streamline California's renewable energy project approval process and to increase the State's Renewable Energy Standard to 33 percent renewable power by 2020;
- Supporting the greenhouse gas reduction goals of Assembly Bill 32 (California Global Warming Solutions Act of 2006); and
- Sustaining and stimulating the economy of Southern California by helping to ensure an adequate supply of renewable electrical energy, while creating additional construction and operations employment and increased expenditures in many local businesses.

CEQA PROCESS

The Energy Commission's siting regulations require Energy Commission staff to independently review the AFC and assess whether the list of environmental impacts contained is complete and whether additional or more effective mitigation measures are necessary, feasible, and available (Cal. Code Regs., tit. 20, §§ 1742 and 1742.5(a)).

In addition, Energy Commission staff must assess the completeness and adequacy of the measures proposed by the applicant to ensure compliance with health and safety standards and the reliability of power plant operations (Cal. Code Regs., tit. 20, § 1743(b)). Energy Commission staff is required to develop a compliance plan (coordinated with other agencies) to ensure that applicable laws, ordinances, regulations, and standards are met (Cal. Code Regs., title 20, § 1744(b)). Energy Commission staff conducts its environmental analysis in accordance with the requirements of the California Environmental Quality Act (CEQA). No additional Environmental Impact Report (EIR) is required because the Energy Commission's site certification program has been certified by the California Resources Agency as meeting all requirements of a certified regulatory program (Pub. Resources Code, § 21080.5 and Cal. Code Regs., title 14, § 15251 (j)).

Energy Commission staff's impact assessment, including the recommended conditions of certification, is only one piece of evidence that the Committee assigned to oversee the Genesis Solar Energy Project AFC will consider in reaching a decision on the proposed project and making its recommendation to the full Energy Commission. At the public evidentiary hearings (scheduled to begin on July 12, 2010), all parties will be afforded an opportunity to present evidence and to rebut the testimony of other parties, thereby creating a hearing record on which a decision on the project can be based. The hearing before the assigned Committee also allows all parties to argue their positions on disputed matters, if any, and it provides a forum for the Committee to receive comments from the public and other governmental agencies.

Following the hearings, the Committee's recommendation to the full Energy Commission on whether to approve the proposed project will be contained in a document entitled the Presiding Member's Proposed Decision (PMPD). Following its

publication, the PMPD is circulated in order to receive written public comments. At the conclusion of that comment period, the PMPD is submitted to the full Energy Commission for a decision (the Committee may also chose to prepare a revised PMPD prior to full Energy Commission decision). If the Committee does prepare a Revised PMPD, at the close of its comment period, the PMPD will then be submitted to the full Energy Commission for a decision.

PUBLIC NOTICES, OUTREACH, AND PUBLIC AND AGENCY INVOLVEMENT

PUBLIC COORDINATION

The Energy Commission collaborated with a number of state and federal wildlife agencies in their efforts to facilitate robust public participation in the regulatory review of the GSEP. To reach this goal, Energy Commission staff conducted sixteen (16) public workshops to discuss technical issues related to the proposed project, and determine if GSEP should be approved for construction and operation, and if so, under what set of conditions. These workshops formed the basis of discovery for the proceeding, and provided the public, parties to the proceeding (applicant and intervenors), as well as local, state, and federal agencies the opportunity to ask questions about, and provide input on, the proposed project. The Energy Commission issued notices for these workshops prior to each meeting.

ENERGY COMMISSION STAFF'S PUBLIC OUTREACH

Energy Commission staff provides formal notices to property owners within 1,000 feet of the proposed site and within 500 feet of a linear facility (such as transmission lines, gas lines and water lines). Staff mailed the public notices on October 6, 2009, informing the public, agencies, and elected officials of the Commission's receipt and availability of the application 09-AFC-8. Each notice contained a link to a Commission-maintained project website (http://www.energy.ca.gov/sitingcases/genesis_solar/index.html).

LIBRARIES

On September 29, 2009, the Energy Commission staff also sent copies of the GSEP AFC to the following libraries:

Riverside Main Library 3581 Mission Inn Avenue Riverside, CA 92501	Palo Verde Valley District Library 125 West Chanslor Way Blythe, CA 92225-1245

Copies of the AFC, SA/DEIS (sent on April 10, 2010) and the RSA (sent on June 18, 2010) were also made available to the above libraries, as well as the Energy Commission's Library in Sacramento, the California State Library in Sacramento, as well as, state libraries in Eureka, Fresno, Los Angeles, San Diego, and San Francisco.

GOVERNMENT TO GOVERNMENT CONSULTATION - NOTIFICATION OF THE LOCAL NATIVE AMERICAN COMMUNITIES

The BLM staff first sent initial letters to fourteen Native American tribes regarding the GSEP on November 26th 2007. The letter sought their comments, and invited them to consult on the project on a government-to government basis. Replies were received from the following three (3) Tribes requesting reports, expressing concerns, or referring to neighboring groups whom may have an interest in the project area.

1. Agua Caliente Band of Cahuilla Indians

2. Quechan Indian Tribe

3. Morongo Band of Mission Indians

A second set of letters were mailed to tribes on November 23, 2009 requesting comments and/or specific concerns. On February 22, 2010, the BLM sent an update letter containing information about project review; CEC-BLM staff workshops; the upcoming release of the SA/DEIS; and, cultural resources surveys from summer 2009 and winter 2010. Native American Tribes continue to consult on eligibility evaluations of archeological sites and the Programmatic Agreement (PA) being prepared by BLM, the State Historic Preservation Office (SHPO), and the Advisory Council on Historic Preservation (ACHP). Energy Commission staff receive updates on the PA, and the **Cultural Resources** section of this RSA Supplemental reflects collaborative efforts in this regard.

ENVIRONMENTAL JUSTICE

Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” focuses federal attention on the environment and human health conditions of minority communities and calls on federal agencies to achieve environmental justice as part of this mission. The Order requires the United States Environmental Protection Agency (US EPA) and all other federal agencies to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority or low-income populations. Some agencies have also interpreted this Order as applying to state agencies that receive federal funding. Energy Commission staff assumes that the Order applies, and conducts the appropriate analysis accordingly.

In considering environmental justice in energy facility siting cases, staff uses a demographic screening analysis to determine whether a low-income and/or minority population exists within the potentially affected area of the proposed site. The demographic screening is based on information contained in two documents: “Environmental Justice: Guidance Under the National Environmental Policy Act” (Council on Environmental Quality, December, 1997) and “Guidance for Incorporating Environmental Justice Concerns in EPA’s Compliance Analyses” (U.S. Environmental Protection Agency, April, 1998).

The Environmental Justice screening process relies on Year 2000 U.S. Census data to determine the presence of minority and below-poverty level populations. Guidance from the Council on Environmental Quality, "Environmental Justice: Guidance Under the National Environmental Policy Act,[1]" defines minority individuals as members of the following groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. A minority population is identified when the minority population or the below-poverty-level population of the potentially affected area is:

1. greater than 50%; or

2. present in one or more US Census blocks where a minority population of greater than 50% exists.

In addition to the demographic screening analysis, staff follows the steps recommended by the U.S. EPA's guidance documents in regard to outreach and involvement; and if warranted, a detailed examination of the distribution of impacts on segments of the population.

Staff has followed each of the above steps for the following eleven (11) sections in the RSA: **Air Quality, Hazardous Materials, Land Use, Noise, Public Health, Socioeconomics, Soils and Water Resources, Traffic and Transportation, Transmission Line Safety/Nuisance, Visual Resources,** and **Waste Management**. Over the course of the analysis for each of these eleven technical disciplines, staff considered potential impacts and mitigation measures, and whether there would be a significant impact on an environmental justice population. Staff determined that the remaining technical areas did not involve potential environmental impacts that could contribute to a disproportionate impact on an environmental justice population, and so did not necessitate further environmental justice analysis for those areas.

PROJECT'S COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Based upon the information provided, discovery achieved and analysis completed to date, staff has concluded that with just two exceptions, the implementation of its recommended mitigation measures – described in the conditions of certification – will mitigate all potential environmental impacts of the GSEP to a level of less than significant. Therefore, the project analysis complies with the requirements of the California Environmental Quality Act (CEQA). For a detailed review of potentially significant impacts and the related mitigation measures (conditions of certification), please refer to each chapter of the Revised Staff Assessment (RSA).

This Supplemental assessment contains TSE Appendix A, in which staff discusses impacts to the planned expansion of the Colorado River substation and associated linear facilities. The Energy Commission does not have jurisdiction to impose mitigation on this project, which is licensed by the California Public Utilities Commission, however, staff has suggested appropriate mitigation according to its analyses. As noted in the **Land Use** and **Visual Resources** sections of the RSA, cumulative impacts would be

[1] Available at http://www.epa.gov/compliance/resources/policies/ej/ej_guidance_nepa_ceq1297.pdf.

considerable and cannot be mitigated to less than significant levels. Therefore, if this project were to be approved, an override consideration will be necessary. A copy of staff's override testimony was filed on July 2, 2010, and is attached to this Supplement.

Staff also concludes that with implementation of staff's recommended mitigation measures described in each technical section's conditions of certification, GSEP would comply with all applicable laws, ordinances, regulations, and standards (LORS), except as described in the **Soil and Water Resources** section. To conserve water in the desert and comply with Energy commission policy, staff recommends that the applicant use dry cooling technology for the GSEP. For a more detailed discussion of water policy and related LORS, see staff's technical analysis in the **Soil and Water Resources** section of the RSA.

SUMMARY OF ENVIRONMENTAL IMPACTS AND RELATED MITIGATION (FOR ENERGY COMMISSION AND CEQA PURPOSES)

Table 2 -- Summary of GSEP RSA/Supplement Technical Analyses

Technical Area	Complies with LORS	Impacts Mitigated
Air Quality	Yes	Yes
Alternatives	Not Applicable	Not Applicable
Biological Resources	Yes	Yes
Cultural Resources	Yes	Yes
Efficiency	Not Applicable	Not Applicable
Facility Design	Yes	Yes
Geology and Paleontology	Yes	Yes
Hazardous Materials	Yes	Yes
Land Use	Yes	**No***
Noise and Vibration	Yes	Yes
Public Health	Yes	Yes
Reliability	Not Applicable	Not Applicable
Socioeconomic Resources	Yes	Yes
Soil and Water Resources	**No**	Yes
Traffic and Transportation	Yes	Yes
Transmission Line Safety/Nuisance	Yes	Yes
Transmission System Engineering	Yes	Yes
Visual Resources	Yes	**No***
Waste Management	Yes	Yes
Worker Safety and Fire Protection	Yes	Yes

*cumulative impacts

RECOMMENDATIONS

This RSA Supplement is a document of the Energy Commission staff that has been developed and written with staff collaboration from several other governmental agencies, including the Bureau of Land Management, US Fish & Wildlife Agency and the California Department of Fish & Game. However, the conclusions and recommendations presented herein should be viewed as Energy Commission staff's analyses of the project, and its testimony.

Staff continues to find that, with the exception noted above (Soil & Water), the Genesis Solar Energy Project is in conformance with all LORS. Where Project impacts were identified, Energy Commission staff recommends mitigation to offset direct, indirect, and cumulative impacts to a level of less than significant, and to assure compliance with state and federal laws such as the federal and state endangered species acts.

C. ENVIRONMENTAL ANALYSIS

C.2 - BIOLOGICAL RESOURCES

Testimony of Amy Golden, Sara Keeler, and Susan Sanders

Several minor biological resource issues were left unresolved in the June 11, 2010 Revised Staff Assessment (RSA) prepared for the Genesis Solar Energy Project (GSEP) because certain information was unavailable at the time of publication. The missing information included the golden eagle Spring 2010 survey results and details on biological resource impacts associated with construction of a secondary access/spur road and a distribution /telecommunications line, as well as a possible redundant communications line that might be required. In addition, staff was missing information about the habitat types impacted by the six-pole extension of the generation-tie (gen-tie) line, and also needed to incorporate revised calculations reflecting reduction in impacts to state waters as a result of a removing the 41.4-acre "toe" of the easternmost solar field (TTEC 2010o). Since publication of the RSA, the Applicant has supplied the 2010 golden eagle survey results (TTEC 2010b). On June 18, 2010 the Applicant also submitted the *Supplemental Information for the Genesis Solar Energy Project* (TTEC 2010s) which included additional impact analysis for the other project elements described above.

The following is a description of the new information provided by the Applicant and a discussion of whether this information resulted in any changes to staff's analysis of Project impacts to biological resources or to proposed conditions of certification in the RSA.

Golden Eagle Survey Results

Wildlife Research Institute (WRI) conducted golden eagle surveys by helicopter in accordance with USFWS protocols (Pagel et al. 2010) and prepared the *Golden Eagle Risk Assessment for the Genesis Solar Energy Project*, dated June 2010 (TTEC 2010b). The initial surveys were performed on March 25-26 and April 2-3, 2010 and three golden eagle nests were found within the 10-mile survey buffer of the Genesis Project area (TTEC 2010b). One of these nests was an inactive nest in the McCoy Mountains approximately 8.26 miles east of the Genesis Project site boundary, and 5.2 miles form the closest point of the transmission line. The other two nests were within the Palen Mountains, both approximately 9.8 miles northwest of the Genesis Project site boundary. One of these was inactive, but the other showed evidence that new material may have been recently added; no eagles were observed using this nest. The two nests found in the Palen Mountains likely represent alternate nest sites for one eagle pair given the close proximity of the nests (TTEC 2010b). The three observed nests likely represent two eagle territories, one in the Palen Mountains and one in the McCoy Mountains (TTEC 2010b).

Per the USFWS protocol (Pagel et al. 2010), a follow-up survey was performed on May 14, 2010 to revisit active or possibly active territories and no new eagle nesting activity was observed (TTEC 2010b). No eagles were observed during any March, April, or May 2010 helicopter surveys in either mountain range.

The Golden Eagle Risk Assessment prepared by WRI (TTEC 2010b) concluded that disturbance to nesting golden eagles was unlikely due to the distance of the solar facility

from nests, the lack of view of the Project from the nests and the lack of known prey concentration in the area.

> **Conclusions**: Staff has no changes to the RSA's conditions of certification after reviewing the 2010 golden eagle survey results (TTEC 2010b). Staff's proposed Condition of Certification **BIO-28** (Golden Eagle Inventory and Monitoring) is still applicable despite the fact that no occupied nests were found within 10 miles of the Project boundaries. This condition requires the Project owner to develop a monitoring and adaptive management plan if occupied nests are within 10 miles of the Project, or to submit a determination from USFWS documenting that no monitoring is warranted if surveys do not reveal nests within 10 miles. The 2010 survey results do not change staff's recommendation; staff considers this an appropriate requirement because it provides an opportunity for the USFWS to review golden eagle survey results and provide guidance on implementation of any golden eagle minimization or avoidance measures it deems necessary.

Secondary Access Road

Staff's proposed Condition of Certification **WORKER SAFETY-6** requires the Project owner to provide a second access road for emergency personnel to enter the site. The Applicant has identified a secondary access road to be located 0.5 mile west of the Wiley's Well interchange that would run in a north-south direction for approximately one mile adjacent to the generation-tie line (see Figure 1 in TTEC 2010s). An access road was already planned for this area because this same route was proposed for the generation-tie line. The secondary access road would be 24 feet wide and constructed of all-weather gravel. An emergency gate would be constructed right off of I-10 although no additional shoulder or pull-off along I-10 would be constructed (TTEC 2010s).

Construction of the secondary access road could directly or indirectly impact populations of Harwood's milk vetch, which occur in the immediate vicinity of the proposed road (see Figure 2, TTEC 2010s). Desert unicorn plant and ribbed cryptantha were also detected within 500 feet of the proposed secondary access road and might also be indirectly impacted by construction. Road construction could increase the opportunities for non-native invasive plant species, with adverse effects to native plant and wildlife communities. Direct and indirect impacts to special-status plants associated with construction of the secondary access road would be reduced to less than significant levels with implementation of **BIO-19** (Special-Status Plant Mitigation). Implementation of **BIO-14**, (Weed Management Plan) and **BIO-24** (Revegetation of Temporarily Disturbed Areas) would minimize the potential for indirect impacts to special-status plants due to construction-related weed invasions.

No sign of desert tortoise, burrowing owls, desert kit fox or American badger were detected in the vicinity of the proposed secondary access road, but habitat is present for these species in the Sonoran creosote bush scrub habitat along the proposed route. Migratory birds nesting in Sonoran creosote scrub could also be directly or indirectly impacted by road construction. Implementation of staff's proposed conditions of certification **BIO-9** through **BIO-12** would reduce potential impacts to desert tortoise to less than significant levels. Nesting birds, badger and kit fox, and burrowing owls could all be directly or indirectly affected by construction activities. These impacts would be reduced to less than significant levels with implementation of **BIO-15** (Pre-construction

Nest Surveys), BIO-16 (Avian Protection Plan), **BIO-17** (Badger and Kit Fox Avoidance and Minimization Measures) and **BIO-18** (Burrowing Owl Avoidance and Minimization Measures).

Construction of the secondary access road would impact Sonoran creosote bush scrub habitat. Based on a proposed width of 24 feet and an additional 50-foot buffer for temporary impacts during construction of the secondary access road, approximately 0.82 acres would be permanently impacted and 1.72 acres of habitat would be temporarily impacted (TTEC 2010s). Since the secondary access road is proposed for an area that was already planned for the generation-tie transmission line, the permanent impact for these upland habitats was accounted for in the RSA in the Sonoran creosote scrub impact acreage of 1,773 acres of impact (TTEC 2010s, CEC 2010a). Construction of the secondary access road would directly impact state waters, resulting in an additional minor impact of 0.09 acres (0.06 of temporary and 0.03 of permanent impact) (TTEC 2010s, Table 2).

> **Conclusion**: Compensatory mitigation for impacts to Sonoran creosote scrub/desert tortoise habitat from secondary access road improvements is already included in the proposed Conditions of Certification **BIO-12** (Desert Tortoise Compensatory Mitigation) because it overlaps the impact area for the gen-tie line access road. Avoidance and minimization measures for impacts to state waters from secondary access road construction are addressed with revised proposed Condition of Certification **BIO-22** (Mitigation for Impacts to State Waters). As described below in the discussion of the removal of a 41.4 acre portion of the Project footprint, staff is revising the compensation acreage required to reflect changes to state waters impacts.

Distribution/Telecommunications Line

The Genesis Project would need a power and communication line during construction at the facility footprint, and plans to tap into electrical power from an existing Southern California Edison (SCE) distribution line near the Wiley's Well Rest Stop (TTEC 2010s). The power and communication line would be built adjacent to the final gen-tie line and would utilize power from an existing SCE distribution line near the Wiley's Well interchange. This additional power line would likely remain in place once the construction phase has ended to supply a power and communication source to on-site facilities such as warehouses, offices, and control rooms (TTEC 2010s, TTEC 2010o).

The Applicant has not yet provided a figure depicting the precise location of the proposed distribution /telecommunications line, but based on the project description from the Applicant (TTEC 2010s), staff assumes that it would be immediately adjacent to the final gen-tie line. In the RSA staff provided an analysis of potential impacts of construction of the linear facilities, including the gen-tie line. This impact analysis, which concluded that construction of the linears could result in direct and indirect impacts to sensitive wildlife and plant species and their habitat, would also cover the potential impacts of constructing the distribution/telecommunications line immediately adjacent to it. Likewise, the conditions of certification that provide avoidance, minimization and compensation measures for the impacts of construction of the linears would also provide the appropriate mitigation measures for construction of the distribution/telecommunication line.

The Applicant calculated temporary and permanent impacts of construction of the distribution/telecommunications line assuming that the line would be 6.5 miles long, with 138 poles spaced at 250 feet apart (TTEC 2010s). Temporary construction would impact a 25-ft X 25-ft area, and permanent impacts would result from a 3-ft X 3-ft pad for the poles, a 30-ft X 14-ft spur road to the pole, and a 20 foot radius area from the access road to the spur road (Table 3, Distribution Line Disturbance Area, TTEC 2010s). Using these assumptions the Applicant calculated that the additional impact would be 2.63 acres of permanent impact and 0.58 acres of temporary impact. Based upon further clarification from the Applicant (TTEC 2010t), the additional 3.2-acre impact area from the distribution/telecommunication line would impact 2.36 acres (staff rounded to two acres) of Sonoran creosote scrub habitat and 0.84 acre (staff rounded to one acre) of playa and sand drifts over playa; of this additional impact acreage, 0.82 acre of impact would occur to desert tortoise critical habitat (staff rounded to one acre). These additional impacts were not accounted for in the RSA. At the end of this subsection staff has provided **Revised Biological Resources RSA Table 6**, which indicates the changes to impacts and mitigation requirements as a result of the changes discussed here.

> **Conclusion**: Staff made minor revisions to the proposed Conditions of Certification **BIO-12** (Desert Tortoise Compensatory Mitigation) and **BIO-20** (Sand Dunes/Mojave fringe-toed Lizard Compensation) to address the 3.2-acre increase in impacts to Sonoran creosote scrub/desert tortoise habitat and sand dune habitat resulting from construction of the distribution /telecommunications line. Staff revised **BIO-12** to adjust the habitat mitigation acquired for desert tortoise from 1,864 acres to 1,870 acres as shown in **Revised Biological Resources RSA Table 6** at the end of this subsection. This revision captures the addition of two acres (including one acre of desert tortoise critical habitat) of impact to Sonoran creosote bush scrub from the distribution/ telecommunications line. In addition, staff updated **BIO-20** to adjust the habitat mitigation acquired for Mojave fringe-toed lizard/sand dune habitat from 190 to 212 acres also shown in **Revised Biological Resources RSA Table 6.** This change reflects the addition of one acre of impact to playa and sand drifts over playa from the distribution/telecommunications line as well as revised sand dune impact acreages from removal of the 41.4-acre “toe” described in more detail below.

Redundant Telecommunications Line:

Southern California Edison may require installation of a fiber optic line for telecommunication interconnection between the Colorado River Substation and Genesis Solar switchyard to provide protective relay circuits, supervisory control and data acquisition circuits, data, and telecommunication services (TTEC 2010s). If SCE determines that the Project needs a secondary telecommunications system, it could be installed as either a wireless microwave system or as an underground line in an already disturbed area such as the access road under or adjacent to the gen-tie line (see Figure 3 TTEC 2010s for a proposed route, and Appendix A in TTEC 2010s for a project description). Disturbance associated with construction of the redundant telecommunications line in the access road or adjacent to the gen-tie line would already have been accounted for in the impact acreage for the gen-tie line and the associated

access/maintenance road (TTEC 2010s) and therefore was already addressed in staff's proposed conditions of certification in the RSA.

> **Conclusion**: No changes to staff's proposed conditions of certification are required to address impacts to biological resources from construction of a redundant telecommunications line.

Six-pole Transmission Line Extension

In the RSA staff described the impacts of constructing a six-pole transmission line extension at the Colorado River Substation, a recent modification to the Genesis Project that was not analyzed in the Application for Certification (GSEP 2009a) or the Staff Assessment/Draft Environmental Impact Statement (CEC 2010b). Based on information provided by the Applicant (TTEC 2010o), staff described in the RSA how construction of six additional poles would result in temporary disturbance to 4.6 acres from construction and laydown areas, conductor pulling areas, and the transmission access; within this temporary 4.6-acre impact area 1.2 acres would be permanently affected due to the 6-foot by 6-foot pole construction pad and the 3,700-foot long, 14-foot wide transmission maintenance road. However, the RSA did not describe in which habitat type the 4.6-acre impact would occur, although staff had surmised these impacts would all occur within sand dune habitat (TTEC 2010o).

In their June 18, 2010 supplemental submittal describing this six-pole transmission line extension (TTEC 2010s) the Applicant confirmed that all of these impacts would indeed occur within stabilized and partially stabilized sand dunes. This supplemental report also had a slightly different figure for the impact of this portion of the gen-tie line, stating that the temporary disturbance would be 5.36 acres, permanent disturbance of 1.19 acres, for a total disturbance area of 6.54 acres. No explanation was provided in the supplemental for this slight discrepancy, so staff is conservatively assuming that the larger impact acreage is the correct figure. At the end of this subsection staff has provided **Revised Biological Resources RSA Table 6**, which indicates the revisions to impacts and mitigation requirements as a result of the changes discussed here.

Construction of the six-pole expansion north of the Colorado River Substation could directly and indirectly impact Mojave fringe-toed lizards and a number of other sensitive sand dune-dependent species. Many Mojave fringe-toed lizards were detected north of the proposed Colorado River Substation, as well as numerous rare plants, including Harwood's eriastrum, Harwood's milk-vetch, winged cryptantha and ribbed cryptantha (TTEC 2010o, Attachment A).

Harwood's eriastrum, a California endemic and BLM Sensitive species, has a global distribution restricted to the southeast corner of California, and it is known from only 14 documented locations. As described in the RSA, direct or indirect impacts to Harwood's eriastrum or Harwood's milk-vetch would be significant. Even if the substation expansion avoided direct impacts to these sensitive sand dune species, indirect impacts are also likely to occur. Alterations in drainages could adversely affect special-status plant populations that occur downstream of the Project area. Other indirect effects include the spread of the non-native Sahara mustard and other non-native invasive species, which degrade sand dune habitat by prematurely stabilizing dunes. Transmission line maintenance activities and an increase in OHV use from the

construction of roads into previously inaccessible areas could also adversely affect sand dune-dependent plant and animal species.

No desert tortoise were detected in or within the one-mile buffer around the proposed substation during the 2010 surveys (TTEC 2010o), but given the proximity of suitable habitat in the immediate vicinity of the proposed substation desert tortoise could occur in or near the proposed substation expansion and could be directly or indirectly impacted. Transmission line maintenance activities and an increase in OHV use from the construction of roads into previously inaccessible areas could result in increased disturbance from human intrusions and increased risk of mortality from vehicle strikes and crushing of burrows. Construction activities and addition of new perching structures such as transmission poles and lines could result in increased raven numbers, and hence an increase in desert tortoise predation. Road construction could also increase the opportunities for non-native invasive plant species, with adverse effects to native plant and wildlife communities. Nesting birds, badger, kit fox, and burrowing owls could also be directly or indirectly affected by construction and operation of the expanded substation.

Conclusion: Construction of the six-pole expansion of the gen-tie line has potential for significant impacts to rare plants and other sensitive biological resources. With implementation of the conditions of certification described in the RSA, including Condition of Certification **BIO-19** (Special-Status Plant Impact Avoidance, Minimization and Compensation), these impacts would be reduced to less than significant levels. Implementation of staff's proposed conditions of certification **BIO-9** through **BIO-12** would reduce potential impacts to desert tortoise to less than significant levels. Staff's proposed condition of certification **BIO-13** (Raven Management Plan) would minimize the potential for an increase in raven subsidies from the Project. The potential for impacts to nesting birds, badger and kit fox, and burrowing owls would be reduced to less than significant levels with implementation of **BIO-15** (Pre-construction Nest Surveys), **BIO-16** (Avian Protection Plan), **BIO-17** (Badger and Kit Fox Avoidance and Minimization Measures) and **BIO-18** (Burrowing Owl Avoidance and Minimization Measures).

Staff revised the mitigation obligation in proposed Condition of Certification **BIO-20** (Sand Dunes/Mojave Fringe-toed Lizard Mitigation) to reflect direct impacts to 7.5 acres of sand dune habitat rather than 1 acre. At a 3:1 mitigation ratio for impacts to sand dunes and playa with sand drifts, these additional impacts would increase the mitigation for direct and indirect impacts to Mojave fringe-toed lizard habitat to 212 acres rather than 190 acres. Condition of Certification **BIO-20** is revised as follows:

> **BIO-20** The Project owner shall mitigate for direct and indirect impacts to stabilized and partially stabilized sand dunes and other Mojave fringe-toed lizard habitat by acquisition of **212** ~~190~~ acres of Mojave fringe-toed lizard habitat…... The **212** ~~190~~ -acre acquisition requirement, and associated funding requirements based on that acreage, will be adjusted if there are changes in the final footprint of the Project.

Removal of 41.4-acre "Toe" and Changes to State Waters Acreage:

Since publication of the Draft SA/EIS, the Applicant re-designed the facility footprint by removing a 41.4-acre "toe" area (TTEC 2010o) which decreased direct impacts to sand dunes from 28 acres to 1 acre (from construction of the transmission line linear facility). The removal of a 41.4-acre area also reduced impacts to state waters, but the acreage of that reduction was not provided by the Applicant in their description of minor modifications and also was not described in the RSA. The Applicant provided that this information in its Supplemental Information submittal dated June 18, 2010 (TTEC 2010s), indicating that with elimination of the 41.4-acre toe, desert washes 7 through 10 and 11 (as described in Appendix C, TTEC 2010l) that were originally considered impacted by the Project footprint would instead be preserved. The ephemeral washes in the 41.4-acre area were large (drainages 7 through 10 were 8.5 feet wide by 1,400 feet long, drainage 11 was 3 feet wide and 1,238 feet long [TTEC 2010l) and eliminating this area from the Project footprint reduced the total impact to unvegetated ephemeral drainages by 21 acres.

> **Conclusion**: Staff has revised the impact acreage and mitigation requirements for state waters as shown below in **Revised Biological Resources RSA Table 6**. Condition of Certification **BIO-22** is revised as follows:
>
> > **BIO-22** The Project owner shall acquire, in fee or in easement, a parcel or parcels of land that includes at least **111** ~~132~~ acres of state jurisdictional waters, or the area of state waters directly or indirectly impacted by the final Project footprint.

Reasonably Foreseeable Impacts

Pages C.2-124 through 126 of the RSA described impacts to biological resources as a result of the Colorado River Substation Expansion and interconnection with the Genesis Project because these impacts, which would be a result of actions by Southern California Edison rather than the Applicant, are a reasonably foreseeable consequence of the Project. An updated and more detailed description of impacts to biological resources is provided in **Transmission Systems Engineering Appendix A – Colorado River Substation Expansion and GSEP Interconnection Impact Analysis.**

Revised Biological Resources RSA Table 6
Acreage of Direct and Indirect Impacts to Biological Resources and Recommended Mitigation

Resource	Acres Impacted	Mitigation Ratio	Recommended Mitigation Acreage
Desert Tortoise Habitat – Direct Impacts			
Within DWMA/Critical Habitat[1]	**24** ~~23~~	5:1	**120** ~~115~~
Outside Critical Habitat[2,7]	**1,750** ~~1,749~~	1:1	**1,750** ~~1,749~~
Total Desert Tortoise Mitigation			**1,870** ~~**1,864**~~
Stabilized/Partially Stabilized Sand Dunes – Direct Impacts			
Direct Impacts[3,7,9]	**7.5** ~~1~~	3:1	**22** ~~3~~
Playa and Sand Drifts Over Playa			
Direct Impacts[3,7,11]	**38** ~~37~~	3:1	**114** ~~111~~
Indirect Impacts to MFTL Habitat[4,8]	151	0.5:1	76
Total Mojave Fringe-toed Lizard Mitigation			**212** ~~**190**~~
State Waters* - Direct Impacts[5,10]			
Microphyllous Riparian Vegetation	16	3:1	48
Unvegetated Ephemeral Dry Wash	**53** ~~74~~	1:1	**53** ~~74~~
State Waters- Indirect Impacts[6]			
Unvegetated Ephemeral Dry Wash	21	0.5:1	10
Total State Waters Mitigation			**111** ~~**132**~~

1 *From Application for Incidental Take Permit (TTEC 2009c).*
2 *From CEC 2010d (TetraTech table "Anticipated Direct and Indirect Impacts to Vegetation Communities"); includes impacts to Sonoran creosote bush scrub.*
3 *From CEC 2010d; includes direct permanent impacts to stabilized and partially stabilized sand dunes and sand drifts over playas.*
4 *From **Soil & Water Appendix A**, calculation of the downwind impacts to Mojave fringe-toed lizard habitat from Project intrusion into sand transport corridors.*
5 *From TTEC 2010l (TetraTech memo "Revisions to Jurisdictional Waters for the Genesis Solar Energy Project").*
6 *From Appendix D, Lake and Streambed Alteration Agreement Application (TTEC 2009d).*
7 *From TTEC 2010o (Tetra Tech memo "Minor Changes to the Genesis Solar Energy Project Description: 6-pole Extension of Transmission Line; Inclusion of Distribution and Telecommunications Line; Removal of "Toe" Area from Plant Facility").*
8 *PWA 2010a. (tn pending) PWA memo "Genesis Solar Energy Project, Analysis of Impacts to Sand Transport Corridor")...*
* Reflects changes Also, the removal of the 'toe' from the plant site footprint would also reduce impact acreage to state waters; however these reduced impact calculation have not been provided to date and therefore, are not included in this table.
9 Revised per TTEC 2010s (Supplemental Information Genesis Solar Energy Project June 18, 2010) to include 6.5 acres of impact to sand dunes from the six-pole extension of the gen-tie line north of the Colorado River Substation. Acreage of 3.2 acres of impact from construction of distribution/telecommunications line is not yet included here or in the Sonoran creosote scrub, pending clarification regarding the upland habitat types that will be impacted by the distribution/telecommunications line.
10 Revised per TTEC 2010s (Supplemental Information Genesis Solar Energy Project June 18, 2010) to reduce the impact to state waters by 21 acres, reflecting elimination of the 41.4 acre "toe" at the easternmost solar field.
11 Includes one additional acre of direct impact (rounded up from 0.84 acre) due to construction of the distribution/telecommunications line.

References:

CEC 2010a – Revised Staff Assessment, Biological Resources Section.

CEC 2010b – Draft Environmental Impact Statement/Staff Assessment. Published March 10 2010.

GSEP 2009a. Genesis Solar Energy Project/T. Bernhardt (tn:53083) Application for Certification for the Genesis Solar Energy Project. Submitted to California Energy Commission Docket Unit on August 31, 2009.

Pagel, J.E., D.M. Whittington and G.T. Allen. 2010. Interim Golden Eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Birds, United States Fish and Wildlife Service. February.

TTEC 2010b – Tetra Tech/T. Bernhardt (tn:57235) Golden Eagle Risk Assessment for the GSEP, Riverside County, Ca. June 18 2010.

_____2010l – Tetra Tech/T. Bernhardt. (tn:55590) Applicant's Letter to CDFG Regarding Revisions to Jurisdictional Waters for the Genesis Solar Energy Project. 3/13/10.

_____2010o – Tetra Tech/T. Bernhardt (tn:56815) Minor Changes to the Genesis Solar Energy Project Description: 6-pole Extension of Transmission Line; Inclusion of Distribution and Telecommunications Line; Removal of “Toe” Area from Plant Facility. Includes Attachment A, Blythe Solar Energy Project 2010 Preliminary Survey Results. Submitted by Genesis Solar, LLC Dated May 21, 2010.

_____ 2010s – Tetra Tech/T. Bernhardt (tn:57263) Supplemental Information for the GSEP, June 18 2010. 42 p.

_____2010t – Tetra Tech/E. Festger. (tn:pending) E-mail clarification regarding impacts to vegetation communities from distribution/telecommunications line. June 29, 2010.

C.3 - CULTURAL RESOURCES

Testimony of Elizabeth A. Bagwell, Ph.D., RPA
and Beverly E. Bastian

C.3.1 SUMMARY OF CONCLUSIONS

Staff[1] concludes that the proposed Genesis Solar Energy Project (GSEP) would have a significant direct impact on 27 historically significant archaeological resources and significant indirect impact on 248 contributors to a historically significant cultural landscape. These impacts include:

- Direct impacts to 6 prehistoric-to-historic-period Native American archaeological sites;
- Direct impacts to 6 and indirect impacts to 248 prehistoric-to-historic-period Native American archaeological sites which are potential contributing elements to the prehistoric and ethnographic cultural landscape (historic district), herein referred to as the Prehistoric Trails Network Cultural Landscape (PTNCL);
- Direct impacts to 15 historic-period archaeological sites that are potential contributing elements to a historic-period cultural landscape (historic district), herein referred to as the World War II Desert Training Center California-Arizona Maneuver Area Cultural Landscape (DTCCL); and
- Direct and cumulative impacts to the PTNCL and the DTCCL, resulting from the GSEP's impacts to contributors to these regional resources that staff has determined register-eligible.

Staff finds that the GSEP construction impacts, when combined with impacts from past, present, and reasonably foreseeable projects, contribute in a small but significant way to the cumulatively considerable adverse impacts for cultural resources at both the local I-10 Corridor and regional levels. This analysis estimates that more than 800 sites within the I-10 Corridor, and 17,000 sites within the Southern California Desert Region, will potentially be destroyed. *Mitigation can reduce the impact of this destruction, but not to a less-than-significant level*.

To reduce GSEP's impacts to the greatest extent possible staff recommends the adoption of **CUL-1** and **CUL-2**. **CUL-1** and **CUL-2** would reduce GSEP's cumulative impact by funding programs to define, document, and possibly nominate to the National Register of Historic Places the two cultural landscapes that GSEP shares with two other nearby solar projects. The cost of these programs would be shared by the three projects based on the acreage they would occupy. While the implementation of these conditions would reduce the GSEP impacts to the greatest extent possible, they would still be cumulatively considerable.

To mitigate GSEP's direct and indirect impacts, staff recommends that the Commission adopt cultural resources Conditions of Certification **CUL-3** through **CUL-17**, which would mitigate GSEP's direct and indirect impacts to the cultural resources specific to

[1] "Staff" means Energy Commission staff, unless otherwise indicated.

the project. **CUL-3** identifies the people who would implement the balance of the conditions, and **CUL-4** specifies the information the project owner would supply. **CUL-5** provides for the preparation and implementation of the Cultural Resources Monitoring and Mitigation Plan (CRMMP), which would structure and govern the implementation of the broader treatment program. **CUL-6** provides for the preparation of a final report to analyze, interpret, and document the ultimate results of the whole GSEP cultural resources management program. **CUL-7** would provide training of project personnel to identify, protect, and provide appropriate notice about known and new potential cultural resources in the project construction area. **CUL-8** and **CUL-9** would provide construction monitoring and cultural resources discovery protocols. **CUL-10** through **CUL-13** and **CUL-17** are treatment conditions for direct impacts to historic-period and prehistoric resources that would reduce the severity of GSEP impacts to less-than-significant.

CUL-14 through **CUL-16** might reduce some of the indirect impacts of the proposed project on PTNCL contributors to less-than-significant. However, as of the publication date of this document, the indirect impacts to the contributing elements of the PTNCL have only been partially identified. Staff expects incidental indirect impacts, such as vandalism, to be relatively minor for most of the 248 contributors to the PTNCL. Many of them are either relatively distant from the GSEP site or protected by their location in the Palen-McCoy Wilderness. However, other indirect impacts, of a cultural or spiritual nature, can only be identified by members of the community who value the resources culturally and/or spiritually, in this case Native Americans. The Bureau of Land Management (BLM) is currently in the process of consulting with local Native American groups and others regarding impacts and potential mitigation for the GSEP project area. The results of these negotiations will be formalized in a Programmatic Agreement (PA), as required by Section 106 of the National Historic Preservation Act, and included in BLM's Final Environmental Impact Statement (FEIS) for the GSEP.

Ideally, staff's recommended conditions of certification will not conflict with the required mitigation measures for GSEP impacts promulgated by the BLM in their PA. This is particularly important for the mitigation of impacts to ethnographic resources that rely on the formal Section 106 government-to-government consultation process with Native American groups as an information source for impact assessment and mitigation recommendations. However, in the case of GSEP, this Energy Commission Revised Staff Assessment (RSA) will be published in advance of the FEIS or the PA. Therefore, staff's recommended conditions may be revised, based on BLM's finalized PA, which, it is anticipated, will coordinate the Energy Commission and BLM cultural resources mitigation measures and address the issues of unidentified indirect impacts and appropriate ways to mitigate them. Significant unavoidable indirect impacts that cannot be fully mitigated may be possible, however.

With the adoption and implementation of the entire complement of cultural resources conditions, Conditions of Certification **CUL-1** through **CUL-17**, the GSEP project would be in conformity with all applicable laws, ordinances, regulations, and standards. **CUL-1** and **CUL-2** would reduce the cumulative impacts to the greatest extent possible, but those impacts would still be cumulatively considerable. **CUL-3** through **CUL-17** would reduce the direct impacts to less than significant. In addition, the impacts to ethnographic resources have not yet been evaluated. Consequently, staff does not

know if these resources are significant, or if any mitigation is needed or appropriate. However, significant unavoidable indirect impacts to ethnographic resources that cannot be fully mitigated may be possible. Only with the resolution of those impacts in the BLM's Programmatic Agreement, reflecting Native American identification of additional indirect impacts and recommendation of appropriate mitigation of those impacts, would GSEP's indirect impacts be reduced to a level less than significant. This resolution cannot be guaranteed, however.

Energy Commission staff's recommended Conditions of Certification **CUL-1** through **CUL-17** reflect staff's assessment of what constitutes appropriate mitigation, under the California Environmental Quality Act, for GSEP's identified impacts to register-eligible cultural resources. Staff recognizes that BLM's parallel but different process for resolving adverse project effects (consultation resulting in a PA) may result in different conclusions regarding cultural resources evaluations, the nature and severity of project impacts, and appropriate mitigation measures. Staff recommends that the Commission encourage and work with the BLM to incorporate staff's recommended conditions of certification into the GSEP PA and its associated plan documents.

C.3.2 INTRODUCTION

This cultural resources assessment identifies the potential impacts of the NextEra Genesis Solar Energy Project (GSEP) on cultural resources. Cultural resources are categorized as buildings, sites, structures, objects, and districts under both federal law [for the purposes of the National Environmental Policy Act (NEPA) and the National Historic Preservation Act (NHPA), § 106] and under California state law [for the purposes of the California Environmental Quality Act (CEQA)]. Three kinds of cultural resources, classified by their origins, are considered in this assessment: prehistoric, ethnographic, and historic.

Prehistoric archaeological resources are associated with the human occupation and use of California prior to prolonged European contact. These resources may include sites and deposits, structures, artifacts, rock art, trails, and other traces of Native American human behavior. Groupings of prehistoric resources are also recognized as historic districts and as cultural landscapes. In California, the prehistoric period began over 12,000 years ago and extended through the eighteenth century until 1769, when the first Europeans settled in California.

Ethnographic resources represent the heritage of a particular ethnic or cultural group, such as Native Americans or African, European, Latino, or Asian immigrants. They may include traditional resource-collecting areas, ceremonial sites, value-imbued landscape features, cemeteries, shrines, or ethnic neighborhoods and structures.

Historic-period resources, both archaeological and architectural, are associated with Euro-American exploration and settlement of an area and the beginning of a written historical record. They may include archaeological deposits, sites, structures, traveled ways, artifacts, or other evidence of human activity. Groupings of historic-period resources are also recognized as historic districts and as cultural landscapes.

Under federal and state historic preservation law, cultural resources must be at least 50 years old to have sufficient historical importance to merit consideration of eligibility for listing in the National Register of Historic Places (NRHP) or in the California Register of Historical Resources (CRHR). A resource less than 50 years of age must be of exceptional historical importance to be considered for listing.

For the GSEP, staff provides an overview of the environmental setting and history of the project vicinity, an inventory of the cultural resources identified in the project vicinity, an analysis of the project's potential impacts to significant cultural resources, and recommendations of measures by which the project's adverse impacts to significant cultural resources may be resolved or mitigated.

This analysis is based primarily upon information in the Application for Certification (AFC) (GSEP 2009a) and the Data Adequacy Supplements provided by the Applicant (GSEP 2009c, TTEC 2010c). Most of the key information for this analysis was submitted under confidential cover in Appendix G and three separate versions of the Archaeological Technical Report entitled *Draft Class II and Class III Cultural Resources Inventories for the Genesis Solar Energy Project, Riverside County, California* (August 2009, November 2009, and March 2010). These confidential documents contain site location maps, archaeological site forms for both previously recorded and newly recorded sites, and copies of archaeological technical reports describing other archaeological mitigation in the region. Other important information sources included the applicant's *Preliminary Report of Ancient Shorelines in Ford Dry Lake* (TTEC 2010e) and various communications with BLM archaeological staff, Energy Commission cultural resources staff regularly uses draft archaeological survey reports and archaeological site forms as data sources in order to facilitate the timely completion of the permitting process. Otherwise, last minute changes to facility site footprints or linear corridors requiring additional archaeological survey would result in significant delays.

C.3.3 CULTURAL RESOURCES LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Projects licensed by the Energy Commission are reviewed to ensure compliance with all applicable laws. Although the Energy Commission has pre-emptive authority over local laws, it typically ensures compliance with local laws, ordinances, regulations, standards, plans, and policies. For this project, proposed for construction on federally managed public lands, the Energy Commission must assess the project's conformance with federal laws, ordinances, regulations, standards, and executive orders as well.

CULTURAL RESOURCES Table 1
Laws, Ordinances, Regulations, and Standards to Which the GSEP is Subject

Applicable Law	Description
Federal	
Antiquities Act of 1906 16 United States Code (USC) 431–433	Establishes criminal penalties for unauthorized destruction or appropriation of "any historic or prehistoric ruin or monument, or any object of antiquity" on federal land; empowers the President to establish historical monuments and landmarks.
Archaeological Resources Protection Act of 1979 (ARPA) 16 USC 470aa et seq.	Protects archaeological resources from vandalism and unauthorized collecting on public and Indian lands.
State	
Public Resources Code (PRC), Section 5097.98(b) and (e)	Requires a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until he/she confers with the Native American Heritage Commission-identified Most Likely Descendents (MLDs) to consider treatment options. In the absence of MLDs or of a treatment acceptable to all parties, the landowner is required to re-inter the remains elsewhere on the property in a location not subject to further disturbance.
PRC, Sections 5097.99 and 5097.991	5097.99 establishes as a felony the acquisition, possession, sale, or dissection with malice or wantonness Native American remains or funerary artifacts. 5097.991 establishes as state policy the repatriation of Native American remains and funerary artifacts.
Health and Safety Code (HSC), Section 7050.5	Makes it a misdemeanor to mutilate, disinter, wantonly disturb, or willfully remove human remains found outside a cemetery; Requires a project owner to halt construction if human remains are discovered and to contact the county coroner.

Applicable Law	Description
Local	
Riverside County General Plan, Multipurpose Open Space Element (Chapter 5), Open Space Policies OS 19.2–19.4	OS 19.2 requires the review of all proposed development for archaeological sensitivity; OS 19.3 Employs procedures to protect the confidentiality and prevent inappropriate public exposure of sensitive archaeological resources when soliciting the assistance of public and volunteer organizations. OS 19.4 Require a Native American Statement as part of the environmental review process on development projects with identified cultural resources.
Riverside County General Plan, Multipurpose Open Space Element (Chapter 5), Open Space Policies OS 19.5–19.7	OS 19.5 allows the History Division of the Riverside County Regional Park and Open-Space District to evaluate large project proposals for their potential preservation or destruction of historic sites; requires projects to provide feasible mitigation for impacts to historic sites prior to county approval. OS 19.6 enforces the California State Historic Building Code so that historic buildings can be preserved and used without posing a hazard to public safety. OS 19.7 endorses the allocation of resources and/or tax credits to prioritize retrofit of historic structures.
Riverside County General Plan, Exhibit A, CEQA Findings of Fact and Statement of Overriding Considerations, Mitigation Monitoring Program,	Measures 4.7.1A, 4.7.1B, and 4.7.1C outline mitigation measures for cultural resources monitoring programs.

C.3.4 SETTING AND EXISTING CONDITIONS

Information provided regarding the setting of the proposed project places it in its geographical and geological context and specifies the technical description of the project. Additionally, the prehistoric, ethnographic, and historical background provides the context for the evaluation of the National Register of Historic Places (NRHP) and CRHR eligibility of any identified cultural resources within staff's area of analysis for this project.

C.3.4.1 REGIONAL SETTING

The proposed GSEP site is located in eastern Riverside County within the central Chuckwalla Valley, an east-southeast-trending valley in California's Mojave Desert Geomorphic Province. This province is characterized by east-west-trending ranges separated by desert valleys with enclosed drainages and dry lakes. The project area of analysis is surrounded by the Palen Mountains to the north, the McCoy Mountains to the northeast, the Little Chuckwalla Mountains to the south, and the Chuckwalla Mountains to the west. The Chuckwalla Valley is a relatively stable tectonic region located between the seismically active Salton Trough to the west and southwest, and the Garlock Fault to the north. The nearest active seismic features, the San Andreas Fault and the Brawley Seismic Zone, are located approximately 47 miles to the southwest (GSEP 2009a, p. 5.5-2). The elevation of Chuckwalla Valley ranges from under 400 feet at its lowest point to approximately 1,800 feet along the valley flanks. The surrounding mountains reach between 3,000 and 5,000 feet in elevation (GSEP 2009a, p. 5.4-1). The project region is relatively flat and generally slopes from north to south with elevations of approximately 400 to 370 feet (GSEP 2009a, p. 3-3).

Physiographically, the project vicinity lies near the toe of alluvial fans which emanate from the Palen Mountains to the north and the McCoy Mountains to the east. The eastern portion of the project site footprint is underlain by a broad, valley-axial drainage that extends southward between these mountains and drains to the Ford Dry Lake playa about one mile south of the project site footprint (GSEP 2009a, p. 3-3). This area receives an average of 5 inches of rain per year. Rather than forming major drainages, rains create sheet wash which eventually reaches the lake bed, but more commonly is absorbed into the ground water (GSEP 2009a, 5.4-3).The site is located near the transition between the Mojave and Colorado Deserts. The dryer Mojave Desert is characterized by Joshua Tree woodland interspersed with creosote bush and white bursage. The more summer-wet climate of the Colorado Desert is also characterized by creosote bush and white bursage but in addition can support such trees as palo verde, ironwood, and ocotillo (West et al. 2007, p. 30). The project vicinity has two main vegetation types: Sonoran creosote bush scrub and stabilized and partially stabilized sand dunes (GSEP 2009a, p. 5.3-1).

The desert environment supports a variety of animals depending on the amount and source of water available. Small mammals, birds and reptiles are the most common in the proposed project vicinity. Some of the mammals in the region include rodents especially rabbits, ground squirrels, gophers, mice, and Kangaroo Rats. Larger mammals are not as common but might include mule deer, Bighorn sheep, and Pronghorn antelope. Among the carnivores, Coyote, Kit Fox, American Badger, Bobcat, and Mountain Lions have been noted. Common reptiles noted in the area include snakes, chuckwalla, Desert Iguana, Mojave Fringe-toed lizard, and the Desert Tortoise. Among the birds hawks, quail, doves, burrowing owls, songbirds, and migrating waterfowl are relatively common.

The project site footprint and linear facilities corridor land is owned and managed by the BLM as part of the Big Maria Colorado Desert Planning Unit. Other units include: Imperial, Santa Rosa, Orocopia, Twenty-nine Palms, Bristol/Cadiz, Palen, Turtle Mountain Whipple Mountain, Big Maria and Picacho. The Big Maria Unit is managed as

part of an amendment to the 25-million-acre California Desert Conservation Area (CDCA)—the Northern and Eastern Colorado Desert Coordinated Management (NECO) Plan—which encompasses 5.5 million acres in the southeastern California Desert (GSEP 2009a, p. 5.3-1). Under BLM's Multiple Use Classification system, the project site footprint and linear facilities corridor lies in Class M (Moderate Use) lands. These lands are managed to provide a variety of uses such as mining, livestock grazing, recreation, utilities, and energy development. Nearby BLM-managed lands with more sensitive classifications include the Palen-McCoy Wilderness, immediately to the north of the project site footprint and the Palen Dry Lake Area of Critical Environmental Concern (ACEC), designated to protect prehistoric cultural resources, adjacent to the southwest corner of the project site footprint.

The Chuckwalla Valley is primarily undeveloped. Historically, its main role has been as an important trade and transportation route between the Pacific coast and the Colorado River. Other uses of the valley include mining, ranching, military training, and recreation. The project site footprint itself has recently been used for off-road vehicle races and sheep grazing, but neither activity currently takes place.

C.3.4.2 PROJECT, SITE, AND VICINITY DESCRIPTION

The proposed facility would be located approximately two miles to the north of Interstate 10 (I-10) between the communities of Blythe, California (21 miles to the east) and Desert Center, California (32 miles to the west). Other nearby landmarks include Ironwood and Chuckwalla State Prisons 6 miles to the south, the Blythe airport 13 miles to the east, and Joshua Tree National Park 61 miles to the west. The facility would be accessed from I-10.

The proposed GSEP consists of two independent, concentrated solar electric-generating facilities. Each facility would have a nominal electrical output of 125 megawatts (MW), for a total of 250 MW. The proposed power blocks and solar arrays would occupy approximately 1,360 acres while the evaporation ponds, access road, administration buildings, and other support facilities would occupy 440 acres. In all, the facility would occupy a total of 1,800 acres, with an additional 90 acres for a primary access road, natural gas pipeline, and a transmission line through which the proposed project would connect to California's electrical grid system (GSEP 2009a, p. 3-1). A secondary access road has been proposed for safety reasons (CEC 2010g) but its route has not yet been determined by the applicant's engineers.

The proposed project would entail the construction of two 125-MW solar collector fields, six 8-acre evaporation ponds, a 10-acre bioremediation land treatment unit, a 230-kV on-site switchyard, a new 6.5-mile, 230-kV transmission line, natural gas pipelines, primary and secondary access roads, a septic system, an on-site leach field, and two power blocks. Existing ground water wells would supply project water. The size and location of the septic system and associated leach field are unspecified. Each proposed power block would include: solar steam generator heat exchangers; a steam turbine generator and condensers; two wet-cooling towers; two natural-gas fired auxiliary boilers; surge volume tanks; fire suppression pumps and pump house; diesel generators; and water storage tanks (GSEP 2009a, p. 3-4). Foundation excavation for

the above project components would reach between 2 and 30 feet below the present ground surface (TTEC 2010c).

Extensive earthwork would be required to grade the site to achieve an average slope of one to three percent. Grading cuts would reach approximately two feet below the present ground surface. The final expected elevation across the project site footprint is unspecified. The proposed drainage realignment would also involve extensive earthwork. In the event of an intense rain storm, the project facilities would need to be protected from storm runoff. As discussed in the Drainage Erosion and Sediment Control Plan, three off-site water diversion channels would be constructed, one passing on either side of the facility and the third through the center. The east and west storm diversion facilities would include the use of swales, ditches, and detention ponds with proposed volumes of 49 acre-feet and 66 acre-feet respectively (GSEP 2009a, p. 3-23). The exact size and location of these drainage facilities are still being determined by the applicant's engineers.

Overall, the total soil volume to be moved to level the site, including drainage diversion channels, evaporation and retention pond excavation, and berm fill placement, would be approximately 712,000 cubic yards of cut and 1,000,000 cubic yards of fill (GSEP 2009a, p. 3-25). However, since the applicant's engineers are still in the process of designing some of the project components, these figures may change.

The proposed project places one 125-MW facility on the east side of the project site footprint with a second 125 MW facility immediately adjacent to the southeast. In order to tie into the proposed Southern California Edison 500–230-kV Colorado River Substation, the applicant proposes that a transmission line from the facility would travel in a southeast direction until it crosses the existing Imperial Irrigation District Blythe-to-Eagle Mountain 162-kV transmission line and then I-10. The line would eventually connect with the Blythe Energy Project Transmission Line (BEPTL). From that intersection, or generation-tie, the line would travel east sharing a series of transmission poles with the BEPTL until it terminates at the Colorado River Substation (GSEP 2009a, p. 3-25; TTEC 2010j). The primary access road would share this same route. The route of the recently proposed secondary access road has not yet been determined (CEC 2010g).

C.3.4.3 ENVIRONMENTAL SETTING

Identifying the kinds and distribution of resources necessary to sustain human life in an environment, and the changes in that environment over time is central to understanding whether and how an area was used during prehistory and history. During the time that humans have lived in California, the region in which the proposed project is located, the Mojave Desert, has undergone several climatic shifts. These shifts have resulted in variable availability of vital resources, and that variability has influenced the scope and scale of human use of the vicinity of the project site. Consequently, it is important to consider the historical character of local climate change, or the paleoclimate, and the effects of the paleoclimate on the physical development of the area and its ecology.

Paleoclimate and Paleoecology

Over the last 20 years studies of pack-rat middens and lake-level studies have provided a picture of the paleoclimate and paleoecology of the Mojave and Colorado Deserts. During prehistoric times, this region fluctuated between cool-and-moist and warm-and-dry periods. These fluctuations in temperature and moisture were crucial to the human occupation of the region. Environmental changes also had important implications for the project vicinity specifically, because of the proximity of Ford Dry Lake. During cool, wet times the regional lakes filled and the necessary resources for human occupation were available. During warm, dry times the lakes dried and the region became a difficult place to live and traverse.

Recent environmental studies suggest that during the Late Pleistocene (18,000 to 8000 cal BC[2]), when humans first occupied North America, conditions in the Mojave Desert were cool and wet (West et al. 2007). Vegetation in the region was dominated by juniper and pinyon woodland, and the freshwater lakes of the region were permanent. This period was followed by the Early Holocene (8000 to 6000 cal BC), which was relatively wet and characterized by regular lake-refilling episodes. This wet environment continued to support the woodland. In contrast, the Middle Holocene (6000 to 4500 cal BC) was significantly dryer with shallow, rapidly oscillating lake levels. During this period the vegetation began to transition to desert scrub. The drying trend continued between 4500 and 1900 cal BC, resulting in persistently dry lake beds and the complete transition to the creosote biotic communities of the modern Mojave and Colorado Deserts, by approximately 4900 cal BC. From 1900 cal BC to the present, the dry pattern has been dominant, with lakes filling periodically for short periods (Sutton et al., 2007, pp. 231–233).

Geology

The Mojave Desert has undergone a complex geologic history that includes sedimentation, volcanic activity, folding, faulting, uplift, and erosion. The project site footprint and linear facilities corridor is underlain by Quaternary[3] alluvial fill. This fill includes Holocene to Pleistocene alluvial fan and stream deposits, as well as lake (lacustrine) and ephemeral lake (playa) deposits. These sediments consist of gravel, sand, silt, and clay, with the coarser deposits located near the valley edges and the finer deposits near the center of the basin. The Quaternary deposits are underlain by the Pliocene Bouse Formation. This formation includes ocean and estuary deposits from an arm of the proto-Gulf of California, or alternatively, a closed brackish basin. No descriptions of this formation come from the Chuckwalla Valley, but in other locations it is a basal limestone (marl) overlain by interbedded clay, silt, sand, and tufa. The Bouse

[2] There are two kinds of radiocarbon (C14) dates: uncalibrated and calibrated dates. Uncalibrated dates are not identical to calendar dates because the level of atmospheric radiocarbon (C14) has not been constant over time. Uncalibrated ages can be converted to calendar dates by means of calibration curves based on comparison of raw radiocarbon dates of samples independently dated by other methods, such as tree ring dating and stratigraphy. Such calibrated dates are expressed as cal AD or BC, where "cal" indicates "calendar years" or "calibrated years."

[3] The Quaternary period is the youngest period of the Cenozoic era in the geologic time scale, spanning 2.588 +/- 0.005 million years ago to the present. It includes two geologic epochs: the Pleistocene (1.8 million–10,000 years ago) and the Holocene (the current epoch, 10,000 years ago to the present).

Formation is irregularly underlain by pebbles cemented in a sandy matrix, representing composite alluvial fans (called a fanglomerate). It is likely Miocene-age, but may also be Pliocene-age. Bedrock beneath the GSEP site consists of metamorphic and igneous intrusive rocks of greater than 63 million years of age (GSEP 2009a, p. 5.5-2).

Geomorphology

Geomorphology is the scientific study of landforms and the processes that shape them. Geomorphologists seek to understand why landscapes look the way they do, to understand landform history and dynamics, and to predict future changes through a combination of field observation, physical experiment, and modeling. Archaeologists use geomorphology to understand how archaeological sites were formed and to predict where sites of various types can be found. Over time, objects, sites and other man-made objects are moved, buried, or exposed by wind, water, plant growth, animal activity, and other natural processes. Geomorphology is a technique that helps archaeologists interpret physical clues in order to understand the specific nature of the changes that have taken place over time. In the case of the current project, geomorphology can be used to predict the location of buried sites, to estimate their current condition, and to estimate the relative age of various geological or archaeological features.

Two geomorphological investigations were completed by the applicant for the proposed project vicinity (Farmer et al. 2009, app. C; TTEC 2010e). Both investigations included a review of existing literature and a site visit to ground-check information from the documentary sources. Kenney (TTEC 2010e) also conducted shallow test excavations (1.5 feet in depth), drew cross-sections of the existing stratigraphy, and estimated the age of the local geologic units.

Kenney (TTEC 2010e) determined the minimum age of the site geologic units in both numerical and relative terms. Relative ages were assigned by stratigraphic position of the sedimentary layers. Numerical ages for sedimentary units were assigned by careful examination of the soil profiles. Desert soils are typically dated utilizing the Soil Development Index (SDI) method. With an SDI value, a soil in question may be compared to other regional soils evaluated with the same method and dated with absolute techniques such as carbon^{14}. For this study, numerical ages for sediments were arrived at by correlating site soil profiles with known dated soils in the Coachella Valley (TTEC 2010e, p. 2).

One of the geomorphic hallmarks of the Basin and Range Geomorphic Province is that streams terminate in local or regional valley sinks and not the Pacific Ocean or Sea of Cortez. A central feature of the proposed project vicinity is one of these sinks, Ford Dry Lake. Two kinds of lakes form in these kinds of conditions: pluvial and playa lakes. Pluvial or perennial lakes formed during Pleistocene glacial maximums that existed for thousands of years. Playa lakes, formed during the Holocene, are quite ephemeral, with life cycles of one to a few tens of years. Each type of lake would have supported different kinds of plants and animals, and as such, would have been attractive to humans in different ways. The sediments of these two types of lakes are also distinct. Pluvial lakes deposit sediments are: green, yellow, or olive-brown in color; consist of sand and clay; form thin, distinct layers; contain aquatic fossils; and lack saline layers.

Playa lakes deposit sediments are: orange or brown in color; consist of silt and sand; do not form distinct layers; do not contain aquatic fossils; and contain saline layers. Geological bore samples from Ford Dry Lake show that it contains playa lake deposits to depths of approximately160 meters (m) (TTEC 2010e, p. 3).

Field mapping within the GSEP vicinity yielded a local stratigraphy of only six units. These included stream deposits, both active and dormant sand deposits, alluvial deposits, and lake deposits. These six units, their distribution across the project site footprint, their estimated age and approximate depths, are described in detail below (TTEC 2010e).

1. Qw sediments are active stream wash deposits composed of loose, very fine to very coarse, light brown to yellowish brown sand with small gravel. This unit is confined within the active washes and is typically 1 to 6 inches thick, but may be greater than 2 feet thick in some of the larger washes. This unit was identified but not recorded in this study.

2. Qs deposits are active, dormant, and relict aeolian sand deposits. They consist of fine, yellowish brown sand sheets up to 1 foot thick. These deposits are scattered across the project site footprint on the modern ground surface of Ford Dry Lake.

3. Qal sediments consist of Quaternary alluvium composed of fine to coarse, brown sand mixed with small gravels averaging 1 foot thick. Gravel surfaces similar to desert pavement can form. This alluvium is present across most of the project site footprint and linear facilities corridor, usually overlaying older alluvium above elevation 374 feet, lake deposits below elevation 374 feet (approximate elevation of latest Pleistocene shoreline). This sediment can be divided into two soil types, the upper which ranges in age from 1,000 to 3,000 years old, and the lower which ranges in age from 7,000 to 8,000 years old. Unit Qsr typically overlays this alluvium.

4. Qsr consists of a relict sand sheet and highly degraded small coppice dune deposits. These sediments were deposited within wind transport and depositional areas during the Holocene that are no longer active. Deposits consist of fine brown sand ranging between 4 and 8 inches thick. Coarse sand and gravel surfaces similar to desert pavement can form. Soil horizons in the upper 2 to 6 inches of this unit range in age from 1,000 to 7,000 years old. Unit Qsr is the most common unit exposed on the surface and typically overlies unit Qal.

5. Qoaf consists of older alluvial fan deposits likely created by Pleistocene glaciers. It is composed of yellowish-red, fine to coarse, silty sand with small to medium gravels. These deposits are ubiquitous across the site near to the surface except for below elevation 374 feet (old shore line) where it may exist below several layers of lake deposits (Ql). This sediment can be divided into multiple soils, the youngest of which is 12,000 to 20,000 years old. The average depth of this unit was not determined, but extended beyond the bottom of most of the test units (deeper than 1.5 feet).

6. Ql sediments are lake deposits associated with the ancient playa Ford Dry Lake. They consist of light yellowish-brown, fine to medium, sandy silt with iron oxide staining. No fossils were noted. Multiple layers of this unit were noted at distinct

elevations. Deposits between 377 and 380 feet were found beneath unit Qoaf indicating they were formed during the Pleistocene at least 12,000 years ago but more likely between 15,000 and 20,000 years ago. All other Ql deposits were above Qoaf indicating that they were formed during the Holocene, at least 12,000 years ago. Deposits between 373 and 374 feet are estimated to 12,000 years old, those between 367 and 370 feet in elevation to be between 8,000 and 12,000 years old, and those at 364 feet in elevation to be between 5,000 and 12,000 years old. The most recent shoreline is located at 360 feet in elevation and appears to have been created during the late Holocene. Ql sediments tend to be overlain by Qal alluvium or Qs sand dunes. These deposits are located mainly in the southwest edges of the project site footprint.

Prehistoric Background[4]

Human populations have occupied the California desert for at least 10,000 years (Moratto 1984). Stratified sites that would aid in providing temporal controls and help establish a cultural chronology are virtually unknown in the study area. The earliest explorations of the Mojave and Colorado Deserts took place in the 1930s and 1940s (Campbell 1931, 1936; Campbell and Campbell 1935; Campbell et al. 1937; Rogers 1939, 1945). During this time a basic cultural-historical outline was established, which has formed the foundation for subsequent efforts (Arnold et al. 2002, pp. 46–48; Love and Dahdul 2002; Schaefer 1994; Warren 1984). However, these early attempts were based on surface scatters and inference rather than large-scale data recovery projects or regional surveys.

Numerous cultural resource management projects have resulted in dramatic increases in our understanding of the prehistory of the region. Two of the most notable synthetic works include the BLM's large-scale cultural resources inventory of the Central Mojave and Colorado Desert Regions (Gallegos et al. 1980) and Crabtree's (1980) overview. It was not until the late 1990s that any archaeological site was excavated and reported in the literature within 100 kilometers (km) of the GSEP project areas. Jones and Klar's (2007) recent review of California archaeology builds from where these earlier authors left off, including the results of recent data recovery projects (Schaefer and Laylander 2007; Sutton et al. 2007). The following discussion and culture-historical sequence primarily follows the sources listed above.

Paleo-Indian Period (about 10,000–8000 BC)

The Paleoindian Period occurs during the first half of the Early Holocene. Isolated fluted projectile points, assignable to the Western Clovis Tradition have been recovered from the Pinto Basin, Ocotillo Wells, Cuyamaca Pass, and the Yuha Desert (Dillon 2002, p. 113; Moratto 1984, pp. 77, fig. 3.1, 87; Rondeau et al. 2007, pp. 64–65, fig. 5.1, table 5.1). All are surface finds, and have no associations with extinct fauna.

Lake Mojave Complex (8000–6000 BC)

The Lake Mojave complex, also known as the Western Pluvial Lakes/Western Stemmed Tradition (Beck and Jones 1997; Erlandson et al. 2007; papers in Graf and Schmitt 2007; Schaefer 1994, pp. 63–64; Sutton et al. 2007; papers in Willig et al. 1988), occurs

[4] This subsection was written by Dwight Simons and Kim Tremaine of Tremaine and Associates.

during the second half of the Early Holocene. It is characterized by Great Basin Stemmed Series projectile points (Lake Mojave and Silver Lake types), abundant bifaces, steep-edged unifaces, crescents, and occasional cobble tools and ground stone tools. These artifacts often occur in undated surface contexts. Assemblage composition and site structure suggest highly mobile foragers, often traveling considerable distances. Little reliance upon vegetal resources is evidenced. The value of wetland habitats remains unclear. Lake Mojave lifeways may have resulted from relatively rapidly changing climate and habitats during the Early Holocene. This would have produced unpredictability in resource distribution and abundance, producing a high degree of residential mobility.

Pinto Complex (8000–3000 BC)

The Pinto complex spans portions of the Early and Middle Holocene. Toolstone use, based on sites attributed to this complex, focus upon materials other than obsidian and cryptocrystalline silicate (CCS). Pinto Series points are stemmed with indented bases, and display high levels of reworking. Bifacial and unifacial cores/tools are common. Ground stone tools are moderately to very abundant, indicating greatly increased use of plant resources. Pinto sites occur in a broad range of topographic and environmental settings, especially within remnant pluvial lake basins. Moderate to large numbers of people, practicing a collector subsistence strategy, occupied large residential base camps for prolonged periods. Logistical forays into surrounding resource patches probably were made from these sites.

Deadman Lake Complex (7500–5200 BC)

Currently, the Deadman Lake complex appears confined to the Twentynine Palms area. Sites usually are surficial and located on old alluvial pediments. Artifacts include small-to-medium-size contracting stemmed or lozenge-shaped points, large concentrations of battered cobbles and core tools, and abundant bifaces, simple flake tools, and ground stone tools. The abundance of cobble tools suggests an emphasis upon plant processing. The Deadman Lake and Pinto complexes may represent two different human populations practicing different seasonal/annual rounds, or Deadman Lake may represent a component of the overall Pinto complex adaptation.

Possible Abandonment (3000–2000 BC)

Beginning roughly at this time, conditions in the Mojave Desert were warmer and drier. Few archaeological sites date to this period. This suggests population densities were very low. It is possible some areas were largely abandoned. This period corresponds in part to the latter part of the proposed “Altithermal Abandonment,” recognized by some prehistorians as characterizing portions of the Great Basin (see Kelly 1997, pp. 8–9).

Gypsum Complex (2000 BC–200 AD)

The Gypsum complex, spanning most of the Early Late Holocene, is characterized by the presence of corner-notched Elko Series points, concave-base Humboldt Series points, and well-shouldered contracting-stemmed Gypsum Series points. Numerous bifaces also occur. Manos and metates are relatively common. During the early portion of the Gypsum complex, settlement-subsistence appears focused near streams. At this time, increased trade and social complexity apparently occurred. Gypsum components

are smaller, more abundant, and occur over a more diverse suite of settings than those dating previously. Evidence for ritual activities include quartz crystals, paint, split-twig animal figurines, and rock art. Gypsum sites are uncommon in the southern and eastern Mojave Desert.

Rose Spring Complex (200 AD–1000 AD)

Cultural systems profoundly changed in the southern California deserts during the Late Late Holocene with the introduction of the bow and arrow, represented by Rosegate Series points. During this time, a major increase in population is thought to have occurred, possibly resulting from a more productive environment and a more efficient hunting technology. Sites often are located near springs, along washes, and sometimes along lakeshores. Intensive occupation is indicated by the presence of wickiups, pit houses, and other types of structures. Well-developed middens have yielded artifact assemblages containing knives, drills, pipes, bone awls, various ground stone tools, marine shell ornaments, and large amounts of obsidian. Obsidian procurement and processing apparently significantly structured settlement-subsistence.

During the middle of this period, a drought referred to as the Medieval Climatic Anomaly occurred, resulting in hypothesized resource shortages.

Late Prehistoric Period (1000 AD–1700 AD)

During the Late Prehistoric period, horticultural practices and pottery were introduced (most likely from the Hohokam area in southern Arizona or from northern Mexico), having its greatest impact along the Lower Colorado River (McGuire and Schiffer 1982; Schaefer 1994, pp. 65–74; Schaefer and Laylander 2007, pp. 253–254). Ceramic artifacts began to appear in the Colorado Desert approximately 1000 AD, assigned to the Lowland Patayan (Lower Colorado Buff Ware) and Tizon Brown Ware traditions (Lyneis 1988; Waters 1982a, 1982b).

A complex cultural landscape composed of rock art, trails, and geoglyphs[5] developed during the Late Prehistoric period. Trade and exchange were elaborated, with an emphasis on links between coastal southern California and the Southwest. In addition to pottery, artifact assemblages include Desert Series projectile points, shell and steatite beads, and a variety of milling tools. Obsidian use declines significantly, with CCS becoming the dominant toolstone.

Prehistory of the Chuckwalla Valley

Singer (1984) presents a lithic quarry-oriented prehistoric settlement model for the Chuckwalla Valley and environs. Over 200 prehistoric sites occur in the region. Past peoples inhabiting the area appear to have been very mobile, especially during late prehistoric and early historic times. During early historic times, native peoples inhabited towns/hamlets located along the Colorado River, within the Coachella Valley, and at major desert springs/oases.

[5] Geoglyphs, also known as intaglios, were created on desert pavements by rearranging and/or clearing pebbles and rocks to form alignments, clearings, and/or figures. Rock alignments are present throughout this region, while representational figures only occur close to the Lower Colorado River. It is assumed that they played some role in sacred or ritual activities.

The Chuckwalla Valley was a relatively closed resource exploitation zone. It served as an east-west oriented trade route/corridor between the Pacific Ocean and the Colorado River/greater Southwest. An extensive network of trails is present within the Chuckwalla Valley. Given its orientation and location, the valley may have been neutral territory (i.e., a buffer zone), unclaimed by neighboring native peoples. Quarry sites probably were "owned" by tribal groups. The distribution of particular types of toolstones may have corresponded to a group's territorial boundaries, and a toolstone type may not have occurred beyond the limits of a group's specific territory.

Within the Chuckwalla Valley, prehistoric sites are clustered around springs, wells, and other obvious important features/resources. Sites include villages with cemeteries, occupation sites with and without pottery, large and small concentrations of ceramic sherds and flaked stone tools, rock art sites, rock shelters with perishable items, rock rings/stone circles, geoglyphs, and cleared areas, a vast network of trails, markers and shrines, and quarry sites. Possible village locations are present at Ford Dry Lake, McCoy Spring, Palen Lake, Granite Well, and Hayfield Canyon.

A cluster of temporary habitation and special activity (task) sites occurs around a quarry workshop in the Chuckwalla Valley. The Chuckwalla Valley aplite quarry workshop complex probably was used throughout the Holocene. During this period, Chuckwalla Valley most likely was occupied, abandoned, and reoccupied by a succession of ethnic groups. In the Early Holocene (i.e., Lake Mohave complex times), the area may have been relatively densely inhabited. During the Middle Holocene (i.e., Pinto and Gypsum complexes period) it may only have been sporadically visited. The subsequent Late Holocene Rose Spring and Late Prehistoric periods probably witnessed reoccupation of the valley by Yuman and Numic-speaking peoples.

Research Topics

Research topics commonly appearing in the Colorado Desert archaeological literature include toolstone procurement, ceramic traditions, horticulture, trade and exchange, and cultural landscapes.

Toolstone Procurement

The geology of the Colorado Desert provided prehistoric peoples with a variety of lithic materials for artifact production (Schaefer and Laylander 2007, pp. 252–253). These included obsidian, cryptocrystalline silicates (chert), crystalline volcanics (basalt, rhyolite), quartz, and plutonic, metamorphic, and sedimentary rocks.

Coso obsidian was the dominant source of obsidian used by Colorado Desert peoples prior to 1000 AD. Other obsidian sources, from the southern Mojave Desert, include Bristol Mountains and Devil Peak (Shackley 1994). Approximately a dozen sources located in Baja California, extreme northwest Sonora, and western Arizona may also have been used (Shackley 1988, 1995, 2005). During the last thousand years, however, Obsidian Butte was the principal obsidian used in the Colorado Desert and coastal southern California (Hughes 1986; Hughes and True 1983; Laylander and Christenson 1988; Schaefer and Laylander 2007, p. 251). Obsidian Butte, located near the southern edge of the Salton Sea, was inaccessible when Lake Cahuilla rose to inundate it (130 feet above sea level).

Several topics relating to prehistoric quarrying and tool manufacturing/use have been identified, including: distinction between formal versus the expedient procurement of toolstone (Wilke and Schroth 1989); lithic reduction strategies and transport of toolstone (Bamforth 1990, 1992); scales of production at ground stone tool quarries (Schneider et al. 1995); and differences in tools/toolstones by gender (Walsh 2000).

Bamforth (1990, 1992) considers Holocene settlement, raw material, and lithic procurement at several quarry sites in the central Mojave Desert. He suggests that quarry use was conditioned upon mobility strategies, regional quality and abundance of toolstone, as well as quarry location. Bamforth suggests that an emphasis on transporting prepared cores during the period 2000 BC–500 AD may have resulted from the formation of relatively large and stable communities in areas with concentrated plant resources.

Singer (1984) studied two quarry workshop sites located in Chuckwalla Valley. Core production and reduction from locally available aplite was emphasized. This yielded flakes and bifaces, which appear to have been exported from the quarries for final reduction at other sites. Few formed tools were observed. Those that were present were choppers and scrapers, possibly used to manufacture wooden digging or prying sticks and shafts. The quarry sites appeared to have experienced long-term occupation and use.

Manufacturing efforts appear to have been directed towards production of expedient, rapidly discarded cutting/scraping/pounding/milling tools from locally available toolstone(s) (Ludwig 2005; Schaefer and Laylander 2007, pp. 252–252; Singer 1984). Specialized tool manufacturing included production of sandstone metates along the western side of the Colorado Desert, projectile point (arrow) workshops at seasonal task sites situated around playas, and large quarries at volcanic outcrops within the Lower Colorado and Gila River Valleys, where mortars and pestles were made (Schaefer and Laylander 2007, p. 252).

Ceramic Traditions

Schaefer and Laylander (2007, pp. 252–253) note that buffware pottery occurring within the Colorado Desert was initially assigned to the Hakataya ceramic series (Schroeder 1958, 1979). Subsequent studies (Waters 1982a, 1982b, 1982c) place it within the Lowland Patayan Ceramic Tradition. Both typologies are based on surface collections of sherds, with little data resulting from stratigraphic excavations, or associated radiocarbon dates. Schroeder focuses upon details of temper, inclusions, and surface treatment, while Waters emphasize rim form. Both attempt to define geographic limits of production for each type. Difficulties in applying either typology and problems with stratigraphic integrity, archaeological contexts, and anomalous associated radiocarbon dates, have allowed only gross chronological estimates and have limited identification of manufacturing regions.

In the Salton Basin, some sites dating between about 350 and 1200 AD contain pottery (Love and Dahdul 2002). This evidence suggests pottery was not introduced or rarely used prior to about 1000 AD. Earlier dates from the preceding 200 years suggest Lake Cahuilla may have attracted Colorado River peoples (and their pottery). Early ceramic

dates from the Colorado Desert correspond closely with the inception of widespread use of Tizon Brownware pottery in the Peninsular Ranges and along the Pacific Coast (Lyneis 1988; Griset 1996), although some dates suggest initial introduction of ceramics by 1200 BC, if not before.

Viewed regionally, pottery use within the Late Prehistoric of the Colorado Desert can be divided into three periods (Arnold et al. 2002, pp. 46–47; Love and Dahdul 2002, pp. 72–73; Waters 1982a, 1982b, 1982c). Patayan I times, about 1200–950 BC, witnessed the inception of several ceramic traditions. During Patayan II times, 950–500 BC, increased local manufacture and use of pottery occurred. Patayan III, 500–240 BC, saw the introduction of "Colorado Buff" pottery, and the westerly spread of ceramics to coastal southern California.

With respect to social and cultural factors governing pottery adoption and use within the Colorado Desert, recent analyses of pottery from the Mojave Desert and surrounding areas provide models focused on behavioral implications regarding its manufacture and function. One concern has been with determining if ceramic vessels were locally made (Eerkens 2001; Eerkens et al. 1999, 2002a; Griset 1996). Neutron activation analysis and petrographic studies have been used to identify chemical and material signatures (Eerkens et al. 2002b). Pottery manufacture does not appear to have been organized at a higher regional level. Instead, pots generally appear to have been locally produced and used, with limited exchange of pots between different groups. Production appears to have been organized at an individual or family level, emphasizing production of largely utilitarian wares.

Pottery from sites in the northern Mojave is characterized by a relatively high number of elemental signatures suggesting higher levels of mobility (Eerkens et al. 2002b). In addition to a higher degree of residential mobility, Eerkens (2003b) suggests people inhabiting the northern Mojave Desert produced a fairly large numbers of pots. The combination of high mobility and a fairly high level of pottery production is seen as leading to caching pots near lowland wetlands, which were fixed in the landscape, development of pottery attributes promoting fuel consumption, and a high degree of standardization of largely utilitarian ceramics.

Sedentism in the Owens Valley, northeast of the Project Area, appears to have developed concurrently with, or immediately prior to, an emphasis on resource storage, at approximately 500 AD. Small seed intensification appears to have occurred about 700–600 BC, at the time brownware pottery became widely used. He concludes that social models, such as those suggesting the activities of aggrandizers or the stabilization of long-distance exchange networks, do not explain these developments. The role played by decrease(s) in population-to-resource balance(s), resulting from increased population pressure, remains unclear.

Eerkens (2003c; 2004) suggests the significant increase in small seed use and the advent of brownware pottery around 700–600 BC are linked. People focused upon seeds because they could easily be privatized. That is, they could be individually owned and thus would not be subject to unrestricted sharing. Pots were a critical component of small seed intensification, because they generally were individually made and owned and could be used within houses, allowing food preparation and consumption to occur

in private. Privatization of small seeds may have resulted from increased population size yielding more potential “freeloaders,” new community kinship structures, and the creation of resource surplus.

Horticulture

At the time of initial Euroamerican contact, 240 years ago, native peoples living along the Lower Colorado River and the Colorado Delta were growing a wide variety of domesticates and wild grasses, which provided 30–50 percent of their subsistence economy (Bean and Lawton 1993; Castetter and Bell 1951; Schaefer and Laylander 2007, pp. 253–254). Annual flooding of the floodplains along the Colorado rejuvenated the soil and provided enough moisture to sustain crops. Lower Colorado River agriculture is presumed to have begun around 700 AD. It probably spread either from the Hokokam area (to the east), or from northern Mexico (to the southeast) (McGuire and Schiffer 1982).

Horticulture subsequently appears to have spread west from the Colorado River. Desert Tipai peoples practiced floodplain agriculture along the New and Alamo Rivers. They also constructed small dams and ditches along washes to direct irrigation water onto adjacent terraces. Agricultural elements probably reached the Imperial Valley around 300 BC Seed caches and mythological references to cultigens possibly indicate very late prehistoric adoption of agriculture. However, the caches contained both native and Old World cultigens. Thus it is unclear if agriculture penetrated west of the Peninsular Ranges in southern California before Euroamerican contact and the sustained influence that came with the establishment of Spanish missions.

Native cultigens may have reached the western Colorado Desert through trade instead of by local production (Schaefer and Laylander 2007, p. 254). Within the Colorado Desert, several archaeological sites have ceramic jars or rock-lined cache pits containing food remains of native or Old World plants (cf., Bayman et al. 1996; Swenson 1984; Wilke 1978; Wilke and McDonald 1989; Wilke et al. 1977). Pumpkin seeds occur in human coprolites (fossilized feces) from the Myoma Dunes at the north end of Lake Cahuilla, and also in a ceramic jar from the west shore of Lake Cahuilla, north of the Fish Creek Mountains. The latter dated to 580–340 BC (Wilke 1978; Wilke et al. 1977).

Early-to mid-nineteenth-century Cahuilla archaeological sites contain glass beads, flaked glass, domestic animal bones, carbonized maize and tepary beans, and uncarbonized gourds. Abundant evidence exists indicating the Cahuilla practiced irrigated agriculture during the early- and mid-nineteenth century. The paucity of macro- and micro-fossil cultigen remains from prehistoric archaeological deposits in Cahuilla territory strongly suggests agriculture did not play a significant role in the Cahuilla economy until the early nineteenth century. Early historic intensification of agriculture may have resulted from final desiccation of Lake Cahuilla, regional population growth, decreased mobility, and acculturation, including introduction of Euroamerican irrigation techniques.

In the Mojave Desert and environs, in the approximate period from 2000 to 800 BC, agriculture first was practiced in southern Nevada and environs as a consequence of

the Anasazi Intrusion (Warren 1984, p. 421, fig 8.25). Maize, squash, beans, grain amaranth, and sunflowers were grown. Agriculture was practiced along with foraging for wild plants and animals. Fields probably were irrigated in some manner. Agriculture appears to have intensified over time.

The Owens Valley Paiute were Great Basin Numic-speaking horticulturalists (Lawton et al. 1976; Liljeblad and Fowler 1986, pp. 417–418; Steward 1930, 1933, 1938, 1941, 1970). Ditch and surface irrigation of blue dicks (*Brodiaea capitata*), yellow nut grass (*Cyperus esculentus*), and spikerush (*Eleocharis* sp.), was practiced. This most likely developed during late prehistoric times, possibly triggered by increased population pressure resulting from climatic change and/or immigration (Bouey 1979).

Yohe (1997) notes aboriginal cultigens, such as melons, squash, and beans, were present at two rockshelters dating to the late nineteenth or early twentieth century in Death Valley. Fowler (1995, pp. 110–112; 1996, pp. 91–98) details garden horticulture among the Southern Paiute and Panamint and Timbisha Shoshone. Stream-irrigated gardens were cultivated, in which corn, beans, squash, sunflowers, and amaranth were grown. These groups also planted gardens near springs, had communal fields with irrigation ditches, and unirrigated stream-bank garden plots. Various land management practices were employed, including intentional burning, clearing, pruning, and coppicing, transplanting and cultivation, and cleaning of water sources.

Winter and Hogan (1986, pp. 125–127, table 1) note that during protohistoric times, agriculture was practiced by the southern California/Nevada Chemehuevi and Ash Meadows, Pahrump, Las Vegas, and Moapa Southern Paiute bands. Among the crops grown were corn, beans, squash, and sunflowers. Forms of plant husbandry directed towards non-domesticates included burning to encourage growth of new plants, broadcast seed sowing, and irrigation of wild stands of bulb and seed plants (Winter and Hogan 1986, pp. 128–129, table 2). These practices are thought to have begun prehistorically, continuing and possibly expanding during early historic times. Wallace(1980) suggests Native American agriculture in the Mojave region was exclusively a historic-period phenomenon.

Trade and Exchange

As Schaefer and Laylander (2007, pp. 254–256) note, prehistoric and ethnohistoric Colorado Desert peoples had a highly developed network of connections linking locations within and beyond the region. High mobility produced considerable cross-cultural interaction and integration in spite of frequent open aggression and warfare between different groups. This integration and interaction occurred between mobile hunter-gatherers and sedentary horticultural peoples. They are archaeologically manifested by the spatial distribution of site types, rock art, artifacts (especially ceramics and shell ornaments), and toolstones (especially obsidian).

Archaeologists monitor the dynamics of prehistoric trade in the Colorado Desert by analysis of the distributions of artifacts made from various toolstones, shell beads and ornaments, and ceramic types and composition (Schaefer and Laylander 2007, pp. 255–256). As previously stated, with respect to toolstones, obsidian from Obsidian Butte is fairly commonly represented in sites located within montane and coastal southern

California (Hughes 1986; Hughes and True 1982; Laylander and Christensen 1988). Obsidian from sources in northern Baja California may have been routed via the Colorado Desert to coastal southern California sites (McFarland 2000). Wonderstone from the Rainbow Rock source is present in western San Diego County and the northern Coachella Valley (Bean et al. 1995; Pigniolo 1995). Material for steatite artifacts found in Colorado Desert sites probably comes from sources in the Peninsular Ranges. Material for argillite artifacts may be from a central Arizona source.

Artifacts made from shellfish species inhabiting the northern Sea of Cortez occur in coastal southern California and the Great Basin (Bennyhoff and Hughes 1987; Fitzgerald et al., 2005) and may have been traded through the Colorado Desert (Schaefer and Laylander 2007, p. 255). Shells from southern California coastal species have been found at a number of Colorado Desert sites and those in the Southwest (Ford 1983). These artifacts may have resulted from direct procurement of shells, or exchange. At the Elmore site, associated with the protohistoric recession of Lake Cahuilla, shell debitage indicates local manufacture of shell beads and ornaments (Rosen 1995). In the Coachella Valley, shell artifacts may reflect close ties to peoples living along the Santa Barbara Channel.

A cache of Lower Colorado Buffware (i.e., Patayan) anthropomorphic figures found in an Orange County site indicates interregional connections (Koerper and Hedges 1996). These also are suggested by the frequency of Lower Colorado Buffware (i.e., Patayan/Hakataya) pottery throughout the Colorado Desert (Bean et al. 1995; Cordell 1997; McGuire 1982; Schaefer and Laylander 2007, p. 255; Schroeder 1979; Shaul and Hill 1998; Waters 1982a, 1982b, 1982c). However, its use occurred among a number of prehistoric peoples practicing divergent settlement and subsistence patterns. Consequently little effort has been made to refine or apply the Patayan tradition as an integrative model.

On a local level, Plymale-Schneeberger (1993) examined pottery from three sites in Riverside County. Petrographic and geochemical analyses allowed quantitative distinction between Tizon Brown Ware and Lower Colorado Buff Ware. The study concluded that Brown Ware was locally produced while Buff Ware was imported. Seymour and Warren (2004) examined proportions of Tizon Brown Ware and Lower Colorado Buff Ware present at sites in Joshua Tree National Park and noted correspondence of pottery types with approximate boundaries of territories occupied by ethnohistorically known native peoples (that is, Cahuilla, Serrano, Chemehuevi).

Davis (1961) and Sample (1950) note that a considerable degree of historic-period trade between Native Americans occurred within and across the Colorado Desert. Trade networks across the Colorado Desert extended to the Yokuts and Chumash. Native peoples living along the Colorado River received and reciprocated goods from many groups living to the west.

Cultural Landscapes

In the Colorado Desert, trails, cairns, geoglyphs, cleared circles, rock rings, other desert pavement features, rock art sites, and artifact scatters appear to be elements of

prehistoric-ethnohistoric cultural landscapes[6] (Schaefer and Laylander 2007, pp. 254–255; Cleland and Apple 2003). Specific localities include the Pilot Knob Complex, the rock art complex at Palo Verde Point, the Ripley Locality, and the Quien Sabe-Big Maria complex. Lower Colorado River geoglyph and rock art sites may represent prehistoric ceremonial centers, located along a route extending between sacred places, representing the cosmology and iconography of Yuman peoples (Altschul and Ezzo 1995; Cleland 2005; Ezzo and Altschul 1993; Gregory 2005; Hedges 2005; Johnson 1985, 2004; Woods et al. 1985).

Trails

During late prehistoric and ethnohistoric times, an extensive network of Native American trails was present in the Colorado Desert and environs (Heizer 1978; Cleland 2007; Sample 1950, p. 23; Apple 2005; Earle 2005; McCarthy 1993; Melmed and Apple 2009; Von Werlhof 1986). Segments of many trails are still visible, connecting various important natural and cultural elements of landscape, for example, these trails are often marked by votive stone piles (cairns) and ceramic sherd scatters (pot drops).

A late prehistoric-early historic Native American trail has been reported traversing roughly east/west through the Chuckwalla Valley (Johnson and Johnstone 1957, map 1). Johnson (1980, p.89-93, fig. 1) identifies this route as part of the Halchedhoma Trail (recorded as CA-Riv-53T) running from San Bernardino through San Gorgonio Pass to the Colorado River at present day Palo Verde Valley. In the vicinity of the Chuckwalla Valley, the trail proceeded roughly east-northeast from Hayfield Dry Lake past the future site of Desert Center to Gruendike Well. From there it went east, south of Palen Dry Lake to Sidewinder Well, then turned east, north of Ford Lake to McCoy Spring. It then headed south, around the south end of the McCoy Mountains, before going northeast towards the Colorado River. Work by McCarthy (1993, Fig. 10) suggests that offshoots of this trail may have crossed the GSEP site footprint leading to Ford Dry Lake and points to the south and west.

Geoglyphs

Geoglyphs were constructed on desert pavements by rearranging and/or clearing pebbles and rocks to form alignments, clearings, and/or figures (Arnold et al. 2002; Gilreath 2007, pp. 288–289; Solari and Johnson 1982). These rock alignments (Harner 1953) occur throughout the deserts of southeast California and adjacent portions of southern Nevada and western Arizona. Rock alignments are present throughout this region, including two recorded along the western foot of the McCoy Mountains (McCarthy 1993). Representational figures have only been noted in close proximity to the Lower Colorado River.

In the Mojave Desert, large rock alignments are found in Panamint Valley, Death Valley, Eureka Valley, and the Owens River Valley (Davis and Winslow 1965; Gilreath 2007, pp. 288–289; von Werlhof 1987). They have been interpreted as resulting from group

[6] "Ethnohistoric" refers to the period during which Euroamerican accounts of Native Americans augment the archaeological record and Native American oral traditions as sources of information on Native Americans. Cultural landscapes, when related to specific ethnic groups, are referred to as "ethnographic landscapes" (Hardesty 2000).

ritual(s) (von Werlhof 1987). Many appear characterized by multiple-use episodes, with portions added through the years as part of ongoing rituals/ceremonies.

Colorado River geoglyphs include the Top Rock Maze (Rogers 1929) and a few dozen giant ground figures (Harner 1953; Setzler and Marshall 1952), often first observed from the air. During historic times, the Top Rock Maze was used by Yuman peoples for spiritual cleansing.

Johnson (1985, 2003), von Werlhof (2004), and Whitley (2000) relate the geoglyphs to Yuman cosmology, origin myths, and religion. Cation ratio dating[7] of desert varnish has provided estimated ages of approximately 1200–1000 BC for the Colorado geoglyphs (Dorn et al. 1992; Schaefer 1994, p. 63; von Werlhof 1995), although use of the technique remains controversial (Gilreath 2007, p. 289).

Von Werlhof (1995, 2004) relates these sites to the Yuman creation story. They also may have functioned as focal points for shamanistic activities, vision quests, curing, and group rituals/ceremonies. Symbolic activities also were represented by intentional pot drop distributions along trails near water sources. The importance to Native Americans of water sources for survival during long-distance trips and seasonal rounds is obvious. Water sources also manifested significant spiritual values and often were associated with major rock art complexes (McCarthy 1993; Schaefer 1992).

Ethnographic Background[8]

Currently, it is unclear which historic Native American group or groups occupied or used the region in which the proposed project site is located, but the Chemehuevi, Serrano, Cahuilla, Mojave, Quechan, Maricopa, and Halchidhoma are the most likely.

Singer (1984, pp. 36–38) concluded the Chuckwalla Valley was not clearly assigned to any Native American group on maps depicting group territories. Following Johnson and Johnstone (1957), he observed that the west end of the Chuckwalla Valley was near the intersecting boundaries of Cahuilla-Serrano-Chemehuevi territory. Possibly before 800 BC, the Chemehuevi may have expanded into Serrano territory, occupying the Chuckwalla Valley. No evidence suggested that the Cahuilla occupied the area. Given its east-west orientation and location, however, the Chuckwalla Valley may have been neutral territory, occupied by no Native American group in particular, which served as an east-west trade and travel route.

The Cahuilla

A wealth of information exists regarding traditional and historic Cahuilla society and culture (see Bean and Lawton 1967 for a comprehensive bibliography of sources). Primary sources for the Cahuilla include Bean (1972; 1978), Bean and Saubel (1972), Drucker (1937), Gifford (1918), Hooper (1920), James (1960), Kroeber (1908; 1925, pp.

[7] Cation ratios between weathered rock varnish and unweathered rock are used as a relative dating technique to roughly determine the age of prehistoric rock carvings (petroglyphs). The quantity of positively-charged ions within the varnish (a chemically-changed layer built up of calcium and potassium leachate over time) is compared to those within the unweathered rock beneath the varnish.

[8] This subsection was written by Dwight Simons of Tremaine and Associates and Sarah Allred of the California Energy Commission.

692–708), and Strong (1929, pp. 36–182). The Cahuilla language, divided into Desert, Pass, and Mountain dialects, has been assigned to the Cupan subfamily of the Takic branch of the Uto-Aztecan linguistic family (Golla 2007; Moratto 1984; Shipley 1978; Munro 1990, p. 218).

Territory traditionally claimed by the Cahuilla was topographically complex, including mountain ranges, passes, canyons, valleys, and desert. Bean (1978:375) described it as, "…from the summit of the San Bernardino Mountains in the north to Borrego Springs and the Chocolate Mountains in the south, a portion of the Colorado Desert west of Orocopia Mountain to the east, and the San Jacinto Plain near Riverside and the eastern slopes of Palomar Mountain to the west." The natural boundaries of the desert, mountains, hills, and plains separated the Cahuilla from surrounding Native American groups. The Cahuilla interacted with surrounding peoples via intermarriage, ritual, trade, and war. The Cahuilla, Gabrielino, Serrano, and Luiseño shared common cultural traditions, with the Cahuilla having especially close ties to the two former groups.

Cahuilla villages usually were located in canyons or on alluvial fans near water and food patches. The area immediately around a village was owned in common by a lineage. Other lands were divided into tracts owned by clans, families, and individuals. Numerous sacred sites with rock art were associated with each village. Villages were connected by trail networks used for hunting, trading, and social visiting. Trading was a prevalent economic activity. Some Cahuilla were trading specialists. The Cahuilla went as far west as the Channel Islands and east to the Gila River to trade.

Hunting and meat processing were done by men. Game included deer, mountain sheep, pronghorn, rabbits, rodents, and birds. These were pursued by individuals and communal hunting groups. Blinds, pits, bows and arrows, throwing sticks, nets, snares, and traps were used to procure game. Communal hunts with fire drives sometimes occurred.

The Cahuilla had access to an immense variety of plant resources present within a diverse suite of habitats (Barrows 1900; Bean and Saubel 1972). Several hundred plant species were used for food, manufacture, and medicine. Acorns, mesquite and screw beans, pinyon nuts, and cactus fruits were the most important plant foods. They were supplemented by a host of seeds, tubers, roots, bulbs, fruits and berries, and greens. Corn, beans, squash, and melons were cultivated. Over 200 species of plants were used as medicines.

Structures varied in size from brush structures to dome-shaped or rectangular houses, 15–20 feet long, and ceremonial houses. The chief's house usually was the largest. Used for many social, ceremonial, and religious functions, it was located near a good water source. It generally was next to the ceremonial house, which was used for rituals, curing, and recreational activities. Other structures included a communal men's sweathouse and granaries.

Mortars and pestles, manos and metates, pottery, and baskets were used to process and prepare plant and animal foods. Cahuilla material culture included a variety of decorated and plain baskets; painted/incised pottery; bows, arrows, and other hunting-related equipment; clothing, sandals, and blankets; ceremonial and ritual costumes and

regalia; and cordage, rope, and mats. Games and music were important social and ritual activities for the Cahuilla.

The Cahuilla had named clans, composed of 3–10 lineages, with distinct dialects, common genitors, and a founding lineage. Each lineage owned particular lands, stories, songs, and anecdotes. Each lineage occupied a village and controlled specific resource areas. Clan territory was jointly owned by all clan members. Territory ownership was established by marked boundaries (rock art, geographic features), and oral tradition. Most of a clan's territory was open to all Cahuilla. Kinship rules determined rights to assets and responsibilities within a lineage. Each lineage cooperated in defense, large-scale subsistence activities, and ritual performance. The founding lineage within a clan often owned the office of ceremonial leader, the ceremonial house, and sacred bundle. Artifacts and equipment used in rituals and subsistence was owned by individuals and could be sold or loaned.

The office of lineage leader usually passed from father to eldest son. He was responsible for correct performance of rituals, care of the sacred bundle, and maintenance of the ceremonial house. The lineage leader also determined when and where people could gather and hunt, administered first-fruits rites, and stored food and goods. He knew boundaries and ownership rights, resolving conflict with binding decisions. The lineage leader met with other lineage leaders concerning various issues. He was assisted in his duties by a hereditary official responsible for arranging details for performance of rituals. Other functionaries included song leaders/ceremonialists, assisted by singers and dancers.

Laws were enforced by ritual, stories, anecdotes, and direct action. Supernatural and direct sanctions were used. Tradition provided authority. The past was the referent for the present and future. Old age provided access to privilege, power, and honor. Reciprocity was a significant expectation. Doing things slowly, deliberatively, and thoughtfully was stressed. Integrity and dependability in personal relations were valued. Secrecy and caution were exercised in dealing with knowledge.

Disputes between Cahuilla villages usually arose over access to resources. Other causes included sorcery, personal insults, kidnapping of women, nonpayment of bride price, and theft. Armed conflict occurred after all other efforts to resolve things had failed. A lineage leader and/or skillful warrior lead a temporary war party. Community rituals were held before and after a fight, which usually involved ambush.

Ritual and ceremony were a constant factor in Cahuilla society. Some ceremonies were scheduled and routine, while others were sporadic and situational. The most important ceremonies were the annual mourning ceremony, the eagle ceremony, rites of passage (especially those associated with birth, naming, puberty, and marriage), status changes of adults, and rituals directed towards subsistence resources. The main focus was upon performance of cosmologically-oriented song cycles, which placed the Cahuilla universe in perspective, reaffirming the relationship(s) of the Cahuilla to the sacred past, present, to one another, and to all things.

The Serrano

Sources for the Serrano include Bean and Smith (1978), Benedict (1924,1929), Drucker (1937), Gifford (1918), Johnson (1965), Kroeber (1925, pp. 615–619), and Strong (1929, pp. 5–35). The Serrano Cahuilla shared many traits and artifacts with the Cahuilla, discussed above. The Serrano spoke a language belonging to the Serean Group of the Takic subfamily of the Uto-Aztecan family (Golla 2007; Moratto 1984; Shipley 1978).

It is nearly impossible to assign definite boundaries to Serrano territory. Territory traditionally claimed by the Serrano included the San Bernardino Mountains east of Cajon Pass, lands in the desert near Victorville, and territory extending east in the desert to Twenty-nine Palms and south to, and including, the Yucaipa Valley.

The Serrano occupied small village-hamlets located mainly in the foothills near water sources. Others were at higher elevations in coniferous forest, or in the desert. The availability of water was a critical determinant of the nature, duration, and distribution of Serrano settlements.

Women gathered, and men hunted and occasionally fished. Topography, elevations, and biota present within the Serrano territory varied greatly. Primary plant foods varied with locality. In the foothills, they included acorns and pinyon nuts. In the desert, honey mesquite, pinyon, yucca roots, and cactus fruits were staples. In both areas they were supplemented by a variety of roots, bulbs, shoots, and seeds, especially chia. Among primary game animals were deer, mountain sheep, pronghorn, rabbits, rodents, and quail. Large game was hunted with bows and arrows. Small game was taken with throwing sticks, traps, snares, and deadfalls. Meat was cooked in earth ovens. Meat and plant foods were parched or boiled in baskets. Plant foods were ground, pounded, or pulverized in mortars and pestles or with manos and metates. Processed meat and plant foods were dried and stored. Occasional communal deer and rabbit hunts were held. Communal acorn, pine nut, and mesquite gathering expeditions took place. These communal activities involved several lineages under a lineage leader's authority.

Serrano houses were circular, domed, individual family dwellings, with willow frames and tule thatching. They were occupied by a husband and wife along with their children, and often other kin. Houses were mainly used for sleeping and storage. Most daily activities occurred outside, often in the shade of a ramada (a flat-roofed, open-sided shade structure) or other sun cover.

Settlements usually had a large ceremonial house where the lineage leader and his family lived. It was the social and religious center for each lineage/lineage set. The latter was two or more lineages linked by marriage, economic reciprocity, and ritual participation. Other structures included semi-subterranean, earth-covered sweathouses located near water, and granaries.

Serrano material culture was very similar to that of the Cahuilla. Stone, wood, bone, plant fibers, and shell were used to make a variety of artifacts. These included highly decorated baskets, pottery, rabbit skin blankets, bone awls, bows and arrows,

arrowshaft straighteners, fire drills, stone pipes, musical instruments, feathered costumes, mats, bags, storage pouches, cordage, and nets.

The clan was the largest autonomous landholding and political unit. No pan-tribal union between clans existed. Clans were aligned through economic, marital, and ceremonial reciprocity. Serrano clans often were allied with Cahuilla clans and Chemehuevi groups. The core of a clan was the linage. A lineage included all men recognizing descent from a common ancestor, their wives, and their descendants. Serrano lineages were autonomous and localized, each occupying and using defined, favored territories. A lineage rarely claimed territory at a distance from its home base.

The head of a clan was a ceremonial and religious leader. He also determined where and when people could hunt and gather. Clan leadership was passed down from father to son. The clan leader was assisted by a hereditary ceremonial official, from a different clan. This official held ceremonial paraphernalia (the sacred bundle), notified people about ceremonies, and handled ceremonial logistics.

Serrano shamans were primarily healers who acquired their powers through dreaming. A shaman cured illness by sucking it out of the sick person and by the administration of herbal medicines. Various phases of an individual's' life cycle were occasions for ceremonies. After a woman gave birth, the mother and baby were "roasted," and a feast held. Differing puberty ceremonies were held for boys (*datura* ingestion used in a structured ceremonial vision quest) and girls ("pit roasting," ingestion of bitter herbs, dietary restrictions, instruction on how to be good wives). The dead were cremated, and a memorial service was held. During the annual seven-day mourning ceremony, the sacred bundle was displayed, the eagle-killing ceremony took place, a naming ceremony for all those born during the preceding year was held, images were made and burned of those who had died in the previous year, and the eagle dance was performed.

The Chemehuevi

Sources for the Chemehuevi include Drucker (1937), Kelly (1934; 1936), Kelly and Fowler (1986), Kroeber (1925, pp. 593–600), Miller and Miller (1967), and Roth (1976; 1977). Carobeth Laird married a Chemehuevi and collected a large corpus of data, primarily on ritual, religion, and myth (Laird 1974a; 1974b; 1975a; 1975b; 1976; 1977a; 1977b; 1977c; 1978a; 1978b; 1984). The Chemehuevi spoke a language belonging to the Southern Group of the Numic subfamily of the Uto-Aztecan family (Golla 2007; Moratto 1984; Shipley 1978). Many traits characterizing Chemehuevi culture are very similar or identical to those of the Mohave, discussed below. Several probable Quechan traits also were noted for the Chemehuevi.

For the territory traditionally claimed by the Chemehuevi, the Colorado River formed the eastern boundary south to the Palo Verde Mountains. The boundary then ran northwest, passing east of the Ironwood Mountains, crossing the Maria Mountains, paralleling the Iron Mountains, and then running between Old Woman Mountain and Cadiz Dry Lake (Kelly 1934; Kelly and Fowler 1986, p. 369, fig. 1). Mohave territory lay to the northeast, and that of the Las Vegas group of Southern Paiute to the north-northwest.

The Chemehuevi lacked any form of overall “tribal” organization. Anthropologists refer to territorial subdivisions among the Chemehuevi as “bands.” Each band was composed of a small number of camps/communities/villages. Bands most likely correspond to economic clusters (Kelly 1964). Each group was a geographic unit, associated with a definite territory. In general, each band was economically self-sufficient.

In general, Chemehuevi settlement was mobile and scattered, with residence recurring within a fixed area. Houses were closely grouped. Their occupants usually were related by blood or marriage. Settlement size ranged from 1–2 households to 10–20. Springs often were inherited private property. Married siblings often camped at the same spring.

The Chemehuevi traveled widely. They had amicable contact with the Serrano, Cahuilla, Quechan/Yumans, and other Native American groups. The Chemehuevi sometimes joined with the Mohave/Quechan to fight the Cocopa/Halchidhoma. The Chemehuevi often crossed the Colorado River and hunted deer in Quechan, Yavapai, and Western Walapai territory. They also traded, intermarried, and competed in games with the Yavapai. To the west, the Chemehuevi hunted in the Tehachapi area and went to the Pacific Coast along the Santa Barbara Channel to get abalone shell. Sometimes, a party of 8–10 Chemehuevi men joined men from neighboring groups to make a two-month journey to the Hopi villages (in what is now New Mexico) to trade.

The Chemehuevi apparently did not eat fish, but bighorn sheep, deer, pronghorn antelope, and desert tortoise were among the animal food resources they used (Kelly and Fowler 1986, p. 369). Plant foods in this region included pinyon nuts and mescal. Men inherited rights to hunt large game within certain tracts, defined in songs using geographic references. Women gathered a great variety of plant foods, which were more important in the Chemehuevi diet than game. In addition to pinyon nuts and mescal, agave and seeds were staples. Along the Colorado River, the Chemehuevi practiced floodplain agriculture. They grew corn, squash, gourds, beans, sunflowers, amaranth, winter wheat, grasses, and devil’s claw using techniques similar to Mohave agricultural practices (see below).

Chemehuevi winter houses were conical/subconical structures. They also built earth-covered houses without a front wall, similar to those constructed by the Mohave. During the summer, many Chemehuevi lived outside, often building and occupying armadas and windbreaks.

With respect to material culture, Chemehuevi baskets and cradles were made from plant fibers. Plant fibers also provided materials for rope, string, and cordage nets. Pottery, which followed Mohave patterns and styles, included cooking pots, water jars, seed germination and storage pots, spoons/scoops, and large pots for ferrying children across the Colorado River. Watercraft included log rafts and reed balsas. Clothing consisted of double skin or fiber aprons and sandals for men and women. The Chemehuevi commonly had pierced ears and wore body paint.

Monogamy was the commonest form of marriage among the Chemehuevi, but some men had more than one wife. Women gave birth in a special enclosure, followed by a 30-day period of seclusion for mother, father, and child. Puberty rites for boys and girls

were held, with the former focused on acquisition of hunting skills. Cremation of the dead was traditional, replaced by in-ground burial in the historic period.

In general, no central political control existed. Territorial boundaries were not rigid, and some bands were named, while others were not. The basic social and economic unit was the nuclear family and could include other close kin. Groups of individual households moved together on hunting and gathering trips, returning to the same spring or agricultural site. Most large bands had a headman whose leadership was more advisory than authoritative. He was usually succeeded by his eldest son.

The principal role of Chemehuevi shamans was curing illness. They acquired their healing powers through dreams rather than through the use of *datura* or a trance. Chemehuevi families held a mourning ceremony ("cry"), with which several speeches and songs were associated, within the year after the death of a relative. The "cry" was sponsored by the family and included the ceremonial burning of material goods.

The Chemehuevi had deer and mountain sheep song-dances, held for entertainment and hunting success. The Chemehuevi had other songs, as well: bird, salt, quail, and funeral songs. During winter evenings, men narrated a rich body of traditional stories and myths. These performances often included mimicry, song, and audience participation. Oral tradition related people to social norms, their territories, and to the subsistence resources present within them.

The Mohave

Information regarding the traditional lifeways of the Mohave has mainly been drawn from the accounts of early explorers and/or fur trappers who were among the first to encounter native groups, as well as from the later ethnographic accounts of anthropologists, usually well after the influences of Euro-American contact had begun to alter traditional ways of life. The following summary derives mainly from Kroeber (1925) and Stewart (1983a, 1983b).

The name Mohave is a variation on the name Hamakhava, which is what the tribal people called themselves (Kroeber 1925, p. 727). The Mohave language is classified into the Yuman subfamily of the Hokan language family. The Mohave were the northernmost and largest tribe of the River and Delta Yumans, who comprised a series of agricultural tribes that occupied the lower Colorado and Gila Rivers. The traditional ethnographic territory attributed to the Mohave includes the Mojave, Chemehuevi, and Colorado River Valleys along the lower Colorado River at the intersection of the borders of Arizona, Nevada, and California. In pre-contact times, Mohave tribal settlement is reported to have centered in the Mohave Valley where their population densities were observed to be the greatest (Stewart 1983b, p. 55).

The Colorado River served as something of an oasis in the otherwise harsh, dry environment that surrounded the river valleys. The spring overflow of the river, which spread gently over the bottomlands, left behind a rich silt deposit in its recession. It is within these bottomlands that the Mohave cultivated crops, which served as the foundation of their subsistence economy. Their agricultural methods were relatively simple, consisting of planting seeds on the richly silted floodplains and allowing their

crops to mature with a minimum of maintenance or effort. Corn was the primary crop, but several varieties of tepary beans, pumpkins, melons, and other plants were also grown. Once harvested, the portions of the harvest that were not immediately consumed were dried in the sun and stored in large basketry granaries. The Mohave supplemented their diet mainly by gathering wild plants and by fishing, which served as their principle source of flesh non-plant food. Hunting played a minor role in the Mohave subsistence economy (Stewart 1983b, pp. 56–59).

Technology of the Mohave was relatively simple, and tools were reported to have been crafted to meet only the minimum requirements of utility (Stewart 1983b, p. 59). According to Kroeber (1925, p. 736), the farming implements consisted of only two items: a heavy wooden staff or digging stick for planting and a spatulate wooden hoe-like implement, whose square edge was pushed flat over the ground to control weeds. Metates, consisting of a rectangular block of stone, were used for grinding corn, wheat, and beans, and both stone and wooden pestles, as well as stone mortars, were also used for food processing (Kroeber 1925, pp. 736–737). Fish were commonly taken with seines, large basketry scoops, sieves, dip nets, and weirs. The bow and arrow and cactus-spine fish hooks were also used for fishing. Mojave basketry was crudely woven, and their pottery was basic and utilitarian (Stewart 1983b, p. 59). Since hunting was of relatively little significance to the Mohave, hunting devices and techniques were not well developed, consisting mainly of snares, nets, bow and arrow, or curved throwing sticks (Stewart 1983b, pp. 59–61).

Mohave political and social organization was very informal, and no one individual or group had significant authority over another. Despite the Mohave's loose division into bands or local groups that were spread out over great distances, their cohesion as a tribe was very strong, and they considered themselves as one people occupying a nation with a well-defined territory (Stewart 1983a, 1983b).

The nuclear family was the basic unit of economic and social cooperation, although the extended family constituted the core of a settlement. Rather than large centralized villages, Mohave settlements were widely distributed along the riverbanks in close proximity to arable lands. Houses were situated on low rises above the floodplain and often separated by as much as a mile or two (Stewart 1983b, p. 57). During most of the year, the Mohave slept under ramadas; however, during the colder season, they occupied more substantial, semi-subterranean, rectangular earth-covered houses.

Warfare was a dominant strain in River Yuman culture, and the Mohave's strong tribal unity served them well in times of warfare. They apparently traveled great distances to do battle, and their principle weapons were bows and arrows and hard wood clubs. According to Kroeber (1925, p. 727), their main motivation was sheer curiosity, as they liked to see other lands and were eager to know the manners of other peoples, but were not heavily interested in trade.

The Mohave were culturally similar to the other River and Delta Yumans: the Quechan, Halichidhoma, Maricopa, and Cocopa. During ethnographic times, the Quechan were considered friends and allies of the Mohave, while the Halchidhoma, Maricopa, and Cocopa were considered to be enemies with whom the Mohave engaged in warfare (Stewart 1983b, p. 56). The Mohave were also friendly with the Upland Yuman tribes of

the Yavapai and Walapai of western Arizona, although relations with the Walapai were somewhat mixed.

One of the most important rituals observed by the Mohave centered on death, namely the funeral and subsequent commemorative mourning ceremony. As soon as possible after death, the deceased was cremated upon a funeral pyre along with all of his or her possessions. The house and granary of the deceased were also burned. It was believed that by burning, these things would be transmitted to the land of the dead along with the soul of the deceased (Stewart 1983b, pp. 65–67).

Due to their relatively remote location inland, the Mohave maintained their independence throughout the Spanish period of the sixteenth and seventeenth centuries and were only rarely visited by explorers during that time. The few Spanish accounts of encounters with the Mohave provided similar descriptions of Mohave lifeways as those reported later by ethnographers. It is believed that the ancestors of the Mojave resided in the area for at least 1000 years and the mode of life in prehistoric times is thought to be similar to that observed historically (Stewart 1983b, p. 56).

The Quechan/Yuma

The following summary of the Quechan or Yuma is derived mainly from Bee (1983), Kroeber (1925), and Stewart (1983a).

Quechan is a variation on the names Kwichyan or Kuchiana, which are the names the tribe called themselves, but this group is also commonly known as the Yuma. The Quechan are among the Yuman-speaking tribes who occupied the lower Colorado River where it forms the boundary between California and Arizona. According to Kroeber (1925, p. 782), the Quechan and their neighbors to the north, the Mohave, appear to be virtually identical in terms of their agriculture, manufactures, clothing, hair styles, houses, warfare, and sense of tribal unity.

The ethnographic territory traditionally associated with the Quechan, now divided between the states of California and Arizona, is centered around the confluence of the Colorado and the Gila Rivers, extending several miles north and south along the Colorado and east along the Gila. Quechan legend tells of a southward migration of their ancestors from a sacred mountain; however, it is not known when the ancestors of the Quechan first settled near the confluence (Bee 1983, p. 86). No group of this name was mentioned in the account of Hernando de Alarcón when he passed through the area during an expedition in 1540, and the first reference to this group did not appear in Spanish documents until the late seventeenth century, at which time they were settled around the river confluence area (Bee 1983, p. 86).

In an environment otherwise surrounded by dry desert terrain, the subsistence economy of the Quechan focused on riverine agriculture, which was one of the main sources of food for the tribe. Crops were cultivated in the richly silted river bottomlands following the recession of the spring floods and provided a relatively high yield in exchange for relatively low labor output (Bee 1983, pp. 86–87). The main cultivated crops included corn, tepary beans, pumpkins, and gourds. In post-contact times, watermelons, black-eyed peas, muskmelons, and wheat were introduced by Europeans and brought into

cultivation by the Quechan, as well. The Quechan also relied on the gathering of wild foods, the most important of which were mesquite and screw-bean pods, although a variety of other wild plants were also collected (Bee 1983, p. 87; Castetter and Bell 1951, pp. 187–188). Fishing was of minor importance, as there were few species in the lower Colorado River suitable for eating. Among the fish sought were the humpback, white salmon, and boneytail, which were sometimes caught with unfeathered arrows or cactus-spine hooks, but more often taken with traps and nets during floods (Forde 1931, pp. 107–120). Given the low incidence of game available in the area, hunting played a minor role in the overall subsistence economy (Bee 1983, p. 86).

Like the Mohave, Quechan tribal settlements, or rancherias, consisted of extended family groups that were widely dispersed along the riverbanks. Settlements shifted throughout the year, dispersing into smaller groups along the bottomlands during the spring and summer farming seasons and reconvening into larger groups on higher ground, away from the river, during the winter and spring flood periods (Bee 1983, pp. 87–88). The geographic dispersion of the households within the rancheria groups was closely correlated with the condition of the rivers and the technology of riverine agriculture (Bee 1983, p. 89). The warm climate and scant precipitation made substantial housing unnecessary for most of the year, so most people made use of ramadas or dome-shaped arrowweed shelters. Each rancheria typically had one or two large, earth-covered shelters for the rancheria leaders' families, but these shelters also accommodated small crowds during colder weather (Forde 1931, p. 122).

Much like the Mohave, Quechan technology lacked technical or decorative elaboration beyond the demands of minimal utility (Bee 1983, p. 89). Quechan bows did not feature "backed" construction and so lacked power, and their arrows were frequently untipped, so the bow and arrow's range was short and the penetrating power weak. Sharpened staffs served as digging sticks or, when cut in longer lengths, as weapons (Bee 1983, p. 89).

In terms of property, there were no marked gradations in wealth, and social pressure favored the sharing of one's abundance with others who were less fortunate. Land ownership was informal, and people did not show much interest in the accumulation of material goods beyond the immediate needs of the family group or the surplus maintained by local leaders for redistribution to needy families within their rancheria (Bee 1983, p. 89). Lands were not inherited by family members upon the death of an individual; rather, the lands of the deceased were abandoned, and replacement plots were sought by the family members.

Despite the wide distribution of settlements, the Quechan had a strong sense of tribal unity. As with their neighbors and allies, the Mohave, warfare played a major role in Quechan culture, and it was during times of warfare that tribal unity was most prevalent among the individual settlements (Bee 1983, p. 92). Their major enemies were the Cocopa and the Maricopa, and they often allied themselves with the Mohave in strikes against common enemies (Bee 1983, p. 93). Bee (1983, p. 93) suggests that warfare among the riverine peoples may have increased in scale and intensity during the eighteenth and early nineteenth centuries due to new economic incentives, such as the opportunity to trade captives to the Spaniards or to other tribes for horses or goods.

Quechan social and political organization, like that of the Mohave, appears to have been very informal, with no one individual or group having significant authority over others. Two types of tribal leadership have been reported for the Quechan, one for civil affairs and the other for war, but it is questionable how influential these leadership roles may have been. Each rancheria had one or more headmen, but their authority was contingent upon public support and continued demonstration of competence. According to Bee (1983, p. 92), important matters at either the tribal or the rancheria level were always decided by consensus, sometimes after long debates dominated by the better and more forceful speaker.

Another important aspect of Quechan society that was shared with the Mohave concerns the commemoration of the dead, which was an elaborate ceremony involving wailing and the destruction of property and ritual paraphernalia. All possessions of the deceased, including the family home, were destroyed or given away (Bee 1983, pp. 89, 93–94).

The Maricopa and the Halchidhoma

Ethnographic information for the Maricopa and Halchidhoma is meager in comparison to the Mohave and the Quechan. The following brief summary is derived from Harwell and Kelly (1983) and Stewart (1983a).

The Halchidhoma first entered written history in the early seventeenth century with the account of Juan de Oñate, who encountered the “Alebdoma” or “Halchedoma” during a Spanish expedition on the lower Colorado River, below its junction with the Gila River. When later encountered by missionary-explorer Eusebio Francisco Kino in the early eighteenth century, the Halchidhoma (or “Alchedoma,” as they were referred to by Kino) had moved farther north up the Colorado beyond the Gila. The traditional territory attributed to the Halchidhoma lay along the lower Colorado between the Mohave and the Quechan territories. They were later driven from that area under pressure from their hostile Mohave and Quechan neighbors and moved to the middle Gila River area, where some merged with the Maricopa (Stewart 1983a).

The term Maricopa refers to the Yuman-speaking groups who in the early nineteenth century occupied the area along or near the Gila River and its tributaries (in what is now southern Arizona), but who earlier had occupied the lower Colorado River area. The Maricopa language is closely related to Quechan and Mohave, all three of which are classified as members of the River branch of the Yuman language family (Harwell and Kelly 1983, p. 71). The Maricopa call themselves *pi•pa•s*, “the people.” The name Maricopa is an English abbreviation of the name Cocomaricopa, first used by Eusebio Kino in the late seventeenth century (Harwell and Kelly 1983, p. 83).

The Maricopa, who by the early nineteenth century included remnant tribes of the Halyikwamai, Kahwan, Halchidhoma, and Kavelchadom, share common origins and are culturally similar to both the Quechan and the Mohave, the most prominent traits of which included floodwater agriculture and cremation of the dead. Their material culture was also essentially the same (Harwell and Kelly 1983, p. 71). The Colorado River Maricopa lived in low, rectangular, earth-covered houses, but the Maricopa of the Gila River had adopted the round houses of their Piman neighbors. Technology was of little

interest to the River Yumans and remained at a low level of development (Stewart 1983a).

Historical Background[9]

The Mojave Desert area, in which the GSEP is located, has remained one of the more sparsely populated regions of the American West. The harsh arid environment and paucity of natural water supply has presented a challenge to the development of trans-desert routes for the movement of people and goods, to the exploitation of resources in the area, and to the establishment of permanent settlement. The major historical themes for the Mojave Desert region and GSEP vicinity, in particular, are centered on the establishment of transportation routes, water access, mineral exploitation, and military uses. The following brief historical background of the Mojave Desert area in eastern Riverside County is derived from the following sources: Bischoff (2000); Castillo (1978); Farmer, et al. (2009); GSEP (2009); von Till Warren (1980); and WESTEC (1982).

The earliest recorded history of the lower Colorado River region began with the expeditions of Spanish explorers, who were lured by rumors of a rich northern Indian civilization. However, due to the Spaniards' failure to find the fabled northern treasures and the remoteness of the region, the Mojave Desert was seldom visited during the Spanish and Mexican periods.

The desert region has produced a variety of mineral deposits, including gold, silver, fluorite, manganese, copper, gypsum, and uranium. The 1880s and 1890s were years of relative prosperity for mining regions of eastern Riverside County, and intermittent mining activity has occurred in the area since that time. Early mining activities played a significant role in stimulating early occupation and travel across the arid desert. Following the end of the Mexican period in 1848 and the onset of the California Gold Rush in 1849, a flood of gold-seeking emigrants began to pour into California, many of whom were unprepared and suffered extreme hardships during the overland trek through the desert.

One of the earliest major trans-desert trail/wagon routes established in the vicinity of the GSEP was known as Frink's Route. Frink's Route was established in the mid nineteenth century (prior to 1856), connecting southern California supply points with mines and outposts along the Colorado River. Frink's route appears to have passed south of the GSEP site footprint. Another important stage route was the Bradshaw Trail, an overland stage route pioneered by William Bradshaw in 1862. It began in San Bernardino and passed through San Gorgonio Pass, Palm Springs, and the north shore of the Salton Sea before reaching the Colorado River near Blythe. This route followed traditional Indian trails and was used between 1862 and 1877 to haul miners and other passengers to the gold fields at La Paz, Arizona (now Ehrenberg). Wiley's Well Road, which intersects the GSEP linear facilities corridor, was an offshoot of the Bradshaw Trail. The construction and expansion of the Southern Pacific Railroad between Phoenix and Los Angeles by way of Yuma in the late 1870s also brought travelers and supplies to more remote areas, enabling further development of mines and irrigation.

[9] This subsection was written by Sarah Allred of the California Energy Commission.

Around the turn of the last century gypsum was found in the McCoy Mountains. A mining town, Midland, was established here. From 1925 to the 1960s, Midland was a company town owned by the U.S. Gypsum Co. The company had harvested vast amounts of gypsum found in the area. At its peak, the town had a population of approximately 1,000. The Arizona and California Railway, built between 1903 and 1907, was a 50 mile spur rail route connecting Blythe and Midland to the main Santa Fe Railway line at the town of Rice. There were daily trains along this line until the late 1930s. Midland was a thriving mining town until the 1960s when it was entirely abandoned.

Automobile travel across and within the Colorado Desert area first developed using existing wagon roads. By the early twentieth century, the automobile became the preferred means of transportation, and in 1916, Congress approved an Act to identify safe travel routes and ensure protection of available water within the least documented regions of the desert (Brown 1920). The Mecca-Blythe-Ehrenberg route, which approximates the current Interstate 10, is one such route identified under the Act and is located near the southern GSE project boundary. Travelers along these routes relied on natural water sources such as McCoy Spring and wells excavated by wagon road users. Most of the wells in eastern Riverside County were excavated by early prospectors and/or landowners and were often named for the men who dug them. Among the early known wells near the GSEP site footprint and linear facilities corridor include the Hopkins Well, Wiley's Well, and the Ford Well, which appear on the 1920 USGS Water Supply Paper Map, south of the GSEP limits. Portions of Wiley's Well Road, where it passes near McCoy Spring, may have been improved in the 1940s and 1950s to provide access to Midland after rail service ceased.

The GSEP site footprint and linear facilities corridor falls within the limits of Gen. Patton's World War II Desert Training Center/California-Arizona Maneuver Area (DTC/C-AMA), which was in operation from 1942-1944. The area was chosen by Gen. George S. Patton, Jr. to prepare troops for the harsh conditions and environment of combat for the North Africa Campaign. At 12,000,000 acres, the DTC/C-AMA was the largest-ever military training center, stretching from west of Pomona, California, to Yuma, Arizona, and north into Nevada. The valley bordered by the Palen, Little Maria, and McCoy Mountains is considered one of the most extensive maneuver areas in the DTC/C-AMA. After two years in operation and the training of one million troops, the DTC/C-AMA was closed in 1944 as a result of the allied victory in North Africa and the need for trained troops elsewhere. Following the closure of the DTC/C-AMA dismantling and salvage efforts began and the land was ultimately returned to private and government holdings. The remains of the DTC/C-AMA areas consist of rock features, faint roads, structural features, concertina wire, tank tracks, footprints of runway and landing strips, foxholes and bivouacs, concrete defensive positions, refuse, and trails.

C.3.4.4 CULTURAL RESOURCES INVENTORY

A project-specific cultural resources inventory is a necessary step in staff's effort to determine whether the proposed project may cause significant impacts to historically significant cultural resources and would therefore have an adverse effect on the environment.

The development of a cultural resources inventory entails working through a sequence of investigatory phases. Generally the research process proceeds from the known to the unknown. These phases typically involve doing background research to identify known cultural resources, conducting fieldwork to collect requisite primary data on not-yet-identified cultural resources within and near the proposed project, assessing the results of any geoarchaeological studies or environmental assessments completed for the proposed project site, and compiling recommendations or determinations of historical significance for any cultural resources that are identified.

This subsection describes the research methods used by the applicant and Energy Commission staff for each phase and provides the results of the research, including literature and records searches (California Historical Resources Information System (CHRIS) and local records, archival research, Native American consultation, and field investigations.

This subsection also provides a brief description of each cultural resource identified by the applicant. The inventory consists of the body of resources the applicant identified in the AFC, and the descriptions are limited to what the applicant provided, either with the AFC or in response to staff's data requests.

Staff's assessments of the project's impacts on known cultural resources, potential impacts on previously unidentified, buried archaeological resources, and proposed mitigation measures for the project's impacts are presented in a separate subsection below.

Project Area(s) of Analysis

The inventorying of cultural resources within what staff defines as the appropriate area for the analysis of a project's potential impacts is the first step in the assessment of whether the proposed project may cause a significant impact to an important cultural resource and therefore have an adverse effect on the environment. The area that staff considers when identifying and assessing impacts to important cultural resources, called the "project area of analysis" (PAA), is a composite geographic area that accommodates the analysis of each type of cultural resources that is present. The PAA can vary depending on the type of cultural resources under analysis and is usually defined as a specific area within and surrounding the project site and associated linear facility corridors. For this project, staff has defined a PAA for the following cultural resources types:

For archaeological resources, the PAA is defined as the proposed project site footprint, plus a buffer of 200 feet, the project linear facilities routes plus 50 feet to either side of the route, and the maximum depth that would be reached by all foundation excavations and by all pipeline installation trenches. This definition serves to address both direct and indirect impacts on resources whose dimensions may well extend below the surface and beyond the project site.

For ethnographic resources, the PAA is expanded to take into account traditional use areas and traditional cultural places which may be further afield than the project site footprint or the project vicinity. The areas of analysis for ethnographic resources may

include viewscapes that contribute to the historical integrity of a subject resource. Ethnographic resources are often identified in consultation with Native Americans as well as other ethnic or cultural communities, and issues that are raised by these communities may define the APE. For this project the ethnographic PAA is the geographic area around and including the proposed project where the project has the potential to physically or visually degrade ethnographic resources.

For built-environment resources in the rural context of the proposed project, the PAA is defined as the project site and any above-ground linear facilities, plus a half-mile buffer. As this project is located in an undeveloped area, the PAA was reduced to include only the above-ground linear facilities and a half-mile buffer.

Background Inventory Research

Various repositories in California hold compilations of information on the locations and descriptions of cultural resources older than 45 years that have been identified and recorded in past cultural resources surveys. Applicants acquire information specific to the vicinity of their project from certain repositories and to provide it to staff as part of the AFC submitted to the Energy Commission. Additionally, to acquire further information on potential cultural resources in the vicinity of a proposed project, the applicant is required to make inquiries of knowledgeable individuals in local agencies and organizations and to consult Native Americans who have expressed an interest in being informed about development projects in areas to which they have traditional ties.

The archaeologists for the applicant reviewed a number of resources during their background inventory research. This research of the GSEP site footprint and vicinity identified 30 previous cultural resources projects, 88 previously-identified sites (including 1 National Register District), 79 previously-identified cultural isolates, and no built-environment resources (Farmer et al. 2009). Tetra Techs figures are inconsistent; the text, tables, and site forms do not match.

CHRIS Records Search

The California Historical Resources Information System, or CHRIS, is a federation of 11 independent cultural resources data repositories overseen by the California State Office of Historic Preservation. These centers are located around the state, and each holds information about the cultural resources of several surrounding counties. Qualified cultural resources specialists obtain data on known resources from these centers and in turn submit new data from their ongoing research to the centers.

Under BLM's protocol for inventory-level cultural resources investigations on lands for which a Right-of-Way (ROW) grant has been requested, the applicant undertakes a Class I survey. This is a preliminary gathering of data for known sites and other resources from published and unpublished documents, records, files, registers, and other sources, and is intended to produce an analysis and synthesis of all reasonably available data. A Class I survey encompasses prehistoric, historic, and ethnological/ sociological elements and essentially chronicles past land uses (BLM 2004, sec. 8110.21).

The Class I survey of the proposed GSEP was intended to compile information on known cultural resources and previously conducted cultural resources studies pertinent to the location of the proposed project location. These records include individual site forms for known archaeological sites and built-environment resources as well as survey and excavation reports from previous investigations. The primary source for the current project is the Eastern Information Center (EIC) of the CHRIS, at the Department of Anthropology, University of California, Riverside. Tetra Tech asked the staff of the EIC to conduct a literature and records search of the GSEP site footprint and vicinity (Farmer et al. 2009, p. 46). The search covered the areas proposed for the main project components and the linear facilities corridor with a 1.5-mile buffer. In addition, the EIC staff searched the following resources:

- National Register of Historic Places (NHRP);
- California Register of Historical Resources (CRHR);
- California State Historical Landmarks;
- California Points of Historical Interest;
- California Inventory of Historic Resources; and
- BLM cultural Areas of Critical Environmental Concern (ACEC).

CHRIS Results

The CHRIS literature and records search identified 30 previous cultural resources investigations within the search area (**Cultural Resources Table 2**). This included 22 surveys, 6 literature reviews, 1 set of miscellaneous field notes from the region, and 1 project whose nature is undefined. In their review, EIC staff found that 11 of these overlapped with the GSEP archaeological and built-environment PAAs. Parts of three investigations took place on the project site. The first investigation (IC Report No. RI-00220) was an intensive linear survey that cut a 123-m-wide corridor from southeast to northwest through much of the project site. The second investigation (IC Report No. RI-01249) was a sample survey sponsored by the BLM that covered approximately 64 acres or 4 percent of the 1,800-acre project site. The third survey was part of an earlier stage of the GSEP (Farmer et al. 2009). This BLM Class II survey covered a 20 percent random sample of 1,896 acres, including 520 acres within the proposed project site footprint and linear facilities corridor. After these three projects, approximately 68 percent of the project site remained unsurveyed prior to the preparation for the current proposed project. Seven additional surveys, associated with fiber optic lines, geothermal resources, transmission lines, highway improvements, and gas line installation (IC Report Nos. RI-01664, RI-02210, RI-03227, RI-04347, RI-07192, RI-1279, RI-00221), crossed the PAA for the GSEP proposed linear alignment. These surveys covered roughly 25 percent of the 90-acre proposed linear facilities corridor (Farmer et al. 2009).

A new secondary access road has been proposed (CEC 2010g) but the route has not yet been identified. If this new route is outside the original CHRIS search area, an additional cultural resources literature and records search would be required.

CULTURAL RESOURCES Table 2
Previous Cultural Resources Investigations in the GSEP Records Search Area

IC Report Number	Author	Date	Report Title	Survey Type, Acreage	Distance From Project Area of Analysis (PAA)
RI-00002	Rogers	1953	Miscellaneous Field Notes, Riverside County, California. Series of handwritten archaeological field notes of various areas within Riverside County.	Several areas in region.	Within region
RI-00010	McCarthy	1986	A Cultural Resources Assessment of a Proposed Prison Site Near Blythe in Riverside County, California	960 acres	Adjacent
RI-00011	Wilke	1986	Letter Report: Addendum to "A Cultural Resources Assessment of a Proposed Prison Site Near Blythe in Riverside County, California"	15.15 acres	0.1
RI-00092	King et al.	1973	Archaeological and Paleontological Impact Evaluation: American Telephone and Telegraph Company's Oklahoma City/Los Angeles "A" Cable Route, Between the Colorado River and Corona, California	N/A	0.05
RI-00160	Greenwood	1977	Archaeological Resource Survey-West Coast-Mid-Continent Pipeline Project, Long Beach to the Colorado River, Addendum.	11 miles linear survey, 30-m survey corridor.	Within 2.5 miles
RI-00161	Greenwood	1975	Paleontological, Archaeological, Historical, and Cultural Resources-West Coast-Midwest Pipeline Project, Long Beach to the Colorado River.	No survey. Literature review for 235 linear miles, 5-mile-wide corridor.	Within 3 miles
RI-00190	Haymond	1981	Archaeological Survey Report for the Proposed Safety Project on Interstate Route 10 Between Chiriaco Summit and Wiley's Well Overcrossing, Riverside County, CA.	Intensive Pedes-trian Survey, linear survey of over 56 km	Within 1 mile

IC Report Number	Author	Date	Report Title	Survey Type, Acreage	Distance From Project Area of Analysis (PAA)
RI-00220	Cowan & Wallof	1977	Interim Report—Fieldwork and Data Analysis: Cultural Resource Survey of the Proposed SCE Palo Verde-Devers 500kV Power Transmission Line.	Intensive linear pedes-trian survey, 322 km, 123-m corridor	Within 1 mile
RI-00221	Westec Services, Inc.	1982	Cultural Resource Inventory and National Register Assessment of the Southern California Edison Palo Verde to Devers Transmission Line Corridor (California Portion)	6120 acres	Adjacent and Intersect s
RI-00222	Wallof & Cowan	1977	Final Report: Cultural Resource Survey of the Proposed Southern California Edison Palo Verde-Devers 500kv Power Transmission Line	N/A	Adjacent and Intersect s
RI0-0982	Crew & Fitting	1980	An Archaeological Survey of Geothermal Drilling Sites in Riverside County. Science Applications, La Jolla, California.	101 well sites, 30-m-diameter around each site, intensive pedes-trian survey	Within 1 mile
RI-01211	Crabtree et al.	1980	A Cultural Resources Overview of the Colorado Desert Planning Units	N/A	Regional overview
RI-01249	BLM Staff	1978	California Desert Program: Archaeological Sample Unit Records for the Big Maria Planning Unit, BLM. No report, series of BLM California Desert Program Archaeological Sample Unit Record field forms.	Pedes-trian intensive survey, sample survey units, sample units 1.6 km linear.	Portions within PAA
RI-01279	Cook & Cardenas (Principal Investigators)	1981	A Cultural Resource Inventory of the Ford Dry Lake Known Geothermal Resource Area. American Pacific Environmental Consultants, Inc.	Pedes-trian sample survey, ~1,600 acres.	Portions within PAA
RI-01280	Elliott	1981	Draft: Ford Dry Lake Known Geothermal Resource Area Environmental Assessment. BLM.	No survey. Literature review.	Portions within PAA

IC Report Number	Author	Date	Report Title	Survey Type, Acreage	Distance From Project Area of Analysis (PAA)
RI-01341	Ritter	1981	Archaeological Appraisal of the Palen Dry Lake, Area of Critical Concern Environmental Concern, Riverside County, California.	Pedes-trian and vehicle survey.	Regional overview, northwes t of project area
RI-01664	Westec Services, Inc.	1982	Cultural Resource Inventory of Seisdata Services Chuckwalla Geophysical Test Corridor, Riverside County, California	85.3	Intersect s
RI-01973	Mack	1985	Archaeological Assessment of Six Parcels (Northern, Rocky, Metro, Palen, Ironwood, and Cockrell) Near Palen Dry Lake, Desert Center, California.	Pedes-trian survey of approxi-mately 5 square miles.	Within 12 miles
RI-02210	Underwood et al.	1986	Preliminary Cultural Resources Survey Report for the US Telecom Fiber Optic Cable Project, From San Timoteo Canyon to Socorro, Texas: The California Segment		Intersect s
RI-02897	Mitchell	1990	Cultural Resource Assessment of 219 Acres of Public Lands Proposed for Exchange to Newport Harbor Development Corp. Letter Report	219	Partial overlap
RI-03029	Rosenthal, R. Conard et al.	1990	Cultural Resources Assessment Southern California Gas Company Proposed Line 5000, Riverside County, California. LSA Associates, Inc.	Linear pedes-trian survey, 54 km, 90-m corridor	Within 2 miles
RI-03227	Demcak	1991	An Archaeological Assessment of Tracts 19734 and 19735, Lot #8 in the La Sierra Area of the City of Riverside, California	42	Intersect s
RI-03674	McCarthy	1993	Prehistoric Land Use at McCoy Spring: An Arid-Land Oasis in Eastern Riverside County, California. Thesis paper.	Systemat ic and intuitive intensive pedes-trian survey, approxi-mately 300 acres	Within 9 miles
RI-04082	Mooney	1990	Wiley's Well Road Land Exchange, Cultural Resource Survey	470	0.35

IC Report Number	Author	Date	Report Title	Survey Type, Acreage	Distance From Project Area of Analysis (PAA)
RI-04347	Keller	1999	A Phase I Cultural Resources Assessment of General Plan Amendment 500, Change of Zone 6468, +/- 50.0 Acres of Land Near Blythe, Riverside County, California	50	Partial overlap
RI-05245	Schmidt	2005	Southern California Edison Company Blythe-Eagle Mountain 161 kV Deteriorated Pole Replacement Project, BLM State Permit CA#-04-23 Field Authorization #CA-690-05-FA04.	Pedes-trian survey, 40-m radius around each pole location.	Within 2 miles
RI-05828	Raschkow	2001	Project Review and Statistical Summary: Primitive Skills Team-Rehab of Wilderness Area Intrusions, BLM, Palm Springs South Coast Field Office. No report, summary.	Intensive Class III pedes-trian survey, 7 acres	Within 2 miles
RI-07192	Duke	2002	Cultural Resource Assessment: AT&T Wireless Services, Facility No.06003, Riverside County, California	~0.25	Intersect s
RI-07315	Bonnery & Aislin-Kay	2006	Cultural Resource Records Search and Site Visit Results for T-Mobile Telecommunications Facility Candidate IE24133A (ATC Colo at Wiley Well Rd.) Wiley Well Road and Interstate 10, Desert Center, Riverside County, California	0.25	0.03
N/A	Mooney, Jones & Stokes	2006	Cultural Resource Inventory of the Proposed Blythe Energy Transmission Line Project.	4,072 acres	0.1 to 5+ miles south and east
N/A	Farmer et al. 2009	2009	Class II and Class III Cultural Resources Inventories for the Proposed Genesis Solar Energy Project, Riverside County, California, Final Draft	Class II & III pedes-trian survey, 5430.3 acres, 520 in site footprint	Overlaps with PAA

The most extensive previous research in the region was conducted by McCarthy (1993a). He and his volunteers recorded 227 sites along the western flank of the McCoy Mountains. Many of these sites and trails were directly associated with McCoy Spring, an arid-land oasis and major focus of prehistoric use in the region for several millennia.

Only three of these sites were identified in the Tetra Tech CHRIS literature and records search. Staff considers these sites to be part of the GSEP ethnographic PAA.

In general the previous research in the Chuckwalla Valley suggests that prehistoric archaeological sites are typically located near water (specifically, near springs), on terraces near the shore of the dry lake beds, and in areas where natural resources were utilized. Prehistoric site types in the GSEP site footprint and vicinity include rock shelters, petroglyphs, activity areas, artifact scatters, pot drops, temporary camps, gathering areas, sacred areas, trails, and isolated finds. Prehistoric site types in the region are irregularly defined, particularly in the case of "temporary camps." Using inconsistent types assigned by multiple archaeologists runs the risk of obscuring important prehistoric patterns.

In an effort to be more consistent, staff reviewed the artifacts and features reported at each site and placed each of them into the following categories relevant to the GSEP project: lithic scatter, ceramic scatter, artifact scatter, activity areas, temporary camp, trails, rock rings, cleared areas, rock clusters, cairns, geoglyphs, and petroglyphs. These are defined as follows.

- *Lithic scatters* are light artifact scatters that consist exclusively of debitage and other lithic artifacts, suggesting short-term use.
- *Ceramic scatters* consist exclusively of ceramics. They may or may not also be considered "pot drops" depending on the types of ceramics present and the spatial relationships of the sherds. The small size and low artifact density of ceramic scatters suggest short-term use.
- *Artifact scatters* have multiple types of artifacts present, have light artifact density suggesting short-term use, are not located near water, and have no evidence of features, such as house pits, cleared circles, pot drops, rock art, hearths, rock rings, or petroglyphs.
- *Activity areas* are places where limited specific activities were performed such as rituals, resource extraction, or resource processing. These sites can have features, such as rock rings or petroglyphs, but usually have a low artifact density suggesting short-term use.
- *Temporary camps* are located near water, have a higher artifact density than artifact scatters or activity areas and have artifact types that suggest processing activities, such as ground stone and fire-affected rock (FAR). Ceramics may or may not be present at temporary camps depending on the age of the site. They may also have features such as house pits, cleared circles, pot drops, rock art, hearths, and trails.
- *Trails* are pathways that are deliberately or inadvertently made. They can be sites in themselves or associated with other sites and features. Pot drops are often found along trails. Water sources, temporary camps, and important resources such as toolstone quarries are often the destination of trails.
- *Rock rings* or *cleared areas* are circular features 1–3 m in diameter created on desert pavement and sometimes ringed with rocks. They are thought to be prehistoric short-term habitations areas built along prehistoric trails.

- *Cairns* are stacks of rock deliberately piled up on each other, usually two to three courses high.
- *Rock clusters* are collapsed cairns.
- *Geoglyphs* (also called ground figures, effigies, or intaglios) are rare art images formed on the ground by clearing rocks from patches of ground or forming rock alignments.
- *Petroglyph* sites in the region are either pecked or scratched images on small boulders in the Desert Archaic Abstract style or the Colorado Desert Representational style. These images are usually concentrated around water sources and are the destination of multiple trail segments.

Historical archaeological sites in the region are primarily associated with transportation, DTC/C-AMA and Desert Strike military maneuvers, mining, and ranching. Historical archaeological site types for the area include road segments, wells, refuse scatters with domestic and/or military discards, tank tracks, and other isolates.

A total of 312 previously identified cultural resources and 79 isolated finds were identified in the CHRIS records search area (**Cultural Resources Table 3**). These figures include the results of the Tetra Tech Class II survey and McCarthy's (1993) survey. Two-hundred and ninety-two of these resources were prehistoric sites and 14 were historic-period sites. Four sites had both prehistoric and historic-period components. Two sites have undetermined time periods. Sixty-nine prehistoric isolates were identified including 59 lithics, 4 ceramics, 4 ground stone, 1 isolate with both lithics and ceramics, and 1 unspecified prehistoric artifact. Ten historic-period isolates were identified during the literature search. They included 7 glass isolates, 2 cans, and 1 metal artifact. As is common practice in cultural resources management, staff has eliminated the isolated finds from consideration. If a secondary access road is required (CEC 2010g), these figures would need to be revised.

CULTURAL RESOURCES Table 3
Summary of Previously Known Cultural Resources Identified in GSEP Vicinity

	Pre-historic Sites	Historic Sites	Multi-Component Sites	Unknown Sites	Built Environ-ment	Pre-historic Isolates	Historic Isolates	Total
McCarthy 1990s Survey	224	0	0	0	0	0	0	224
Previously Known Tetra Tech	22	9	1	2	0	35	1	70
Tetra Tech Class II	46	5	3	0	0	34	9	97
Total	292	14	4	2	0	69	10	**391**

A total of 9 of the 312 previously identified sites are within the GSEP plant site footprint or linear corridor. Five previously identified prehistoric sites fell within or near the boundary of the GSEP plant site footprint, including 1 large artifact scatter (CA-Riv-9084), three small lithic scatters (CA-Riv-9047, CA-Riv-9048, CA-Riv-9051), and one

large temporary camp (CA-Riv-9072). All five of these sites were identified during the recent Tetra Tech Class II survey. Four previously identified sites fell within or near the GSEP linear corridor boundary. These sites include two large prehistoric temporary camps (CA-Riv-0260 and CA-Riv-0663), 1 small historic-era refuse scatter (P33-13598), and 1 medium-sized group of WWII-era foxholes and refuse (P33-13656). Staff notes that only one of the four linear corridor sites (CA-Riv-0663) was discussed by Tetra Tech in their updated report.

Sites identified by McCarthy:
68 ceramic scatters
41 trail segments
32 artifact scatters
27 activity areas
22 isolates (mostly metates)
14 petroglyphs
6 temporary camps
3 isolated rock clusters
3 isolated rock rings
2 isolated cleared circles
2 geoglyphs
1 cairn
1 historic-period military camp and refuse scatter
2 unknown.

Previously known single-component prehistoric sites
(including those identified in Tetra Tech's Class II survey):
29 lithic scatters
18 artifact scatters
14 temporary camps
5 ceramic scatters
2 trail segments (also identified by McCarthy).

Previously known single-component historic-period sites
(including those identified in Tetra Techs Class II survey):
10 refuse scatters
1 refuse scatter with features
1 group of WWII era features
1 historic-period well
1 two-track road.

Previously known multi-component sites
(including those identified in Tetra Techs Class II survey):
1 prehistoric temporary camp/historic refuse scatter
2 prehistoric artifact scatters/historic refuse scatters
1 prehistoric lithic scatter/historic refuse scatter.

Other sites:
1 site that may be either prehistoric rock rings or WWII era foxholes
1 unknown site type.

Additional important locations in the region identified during the review of previous research in the area include:

- McCoy Spring National Register District (approximately 5 miles north of the proposed linear facilities corridor at Wiley's Well Road Rest Area);
- Palen Dry Lake, BLM cultural Area of Critical Environmental Concern (adjacent);
- Corn Springs, BLM cultural Area of Critical Environmental Concern (approximately 30 miles);
- Alligator Rock, BLM cultural Area of Critical Environmental Concern (25 miles);
- Camp Young-Desert Training Center, BLM cultural Area of Critical Environmental Concern and State Historical Landmark Riv-985 (marker in Desert Center);
- Colorado River Aqueduct Contractor's General Hospital, State Historical Landmark Riv-922(marker in Desert Center); and
- 1877 Thomas Blythe Canal Intake, State Historical Landmark Riv-948 (marker in Blythe).

Archival and Library Research

Detailed resource-specific information needed by staff may entail primary and secondary research in various archives and libraries, holding such sources as historic aerial photography, historic maps, city directories, and assessors' records. The applicant may include archival information as part of the information provided to staff in the AFC or may undertake such research to respond to staff's data requests. Staff may also undertake such research to supplement information provided by the applicant.

Archival and Library Research Results

The archaeologists for the applicant conducted additional archival research on the history of the GSEP site footprint and vicinity at the BLM State Office Public Records Room where they obtained copies of General Land Office (GLO) maps and surveyor field notes (Farmer et al. 2009, p. 46). The results of this research were primarily data for the historical background subsection of the cultural resources section of the AFC. Additional sources of information consulted for the built-environment section (Farmer et al. 2009, app. F, p. 3-1) of the AFC include:

- County of Riverside Transportation Department and Land Management Agency;
- Caltrans Bridge Inventory;
- San Francisco Public Library;
- Los Angeles Public Library;
- BLM Palm Springs/South Coast Field Office;
- American Automobile Association of Southern California's Archives, Los Angeles; and
- On-line maps.

Local Agency and Organization Consultation

California counties and cities may recognize particular cultural resources as locally historically important by ordinance, in general plans, or by maintaining specific lists. To facilitate the environmental review of their projects, applicants acquire information on locally recognized cultural resources specific to the vicinity of their project by consulting local planning agencies and local historical and archaeological societies.

Results of Inquiries to Local Agencies and Organizations

In order to identify the presence of any locally important cultural resources the archaeologists for the applicant contacted the following organizations by mail or email:

- City of Blythe Planning Department;
- Riverside County Planning Department;
- Coachella Valley Historical Society;
- Coachella Valley Archaeological Society;
- Colorado Desert Archaeology Society;
- George S. Patton Memorial Museum;
- Imperial County Historical Society Pioneers Museum;
- Imperial Valley College Desert Museum;
- Indio Chamber of Commerce;
- Pioneer Historical Society of Riverside;
- Twenty-nine Palms Historical Society; and
- Palo Verde Historical Society and Museum.

The majority of these groups did not respond. The City of Blythe, Coachella Valley Archaeological Society, the Riverside County Planning Department, and the Twenty-nine Palms Historical Society all reported a lack of important cultural resources within or near the GSEP site footprint and linear facilities corridor and/or a lack of relevant information (Farmer et al. 2009, p. 46). Thus, no additional information on known cultural resources was obtained from these sources.

Native American Consultation

The Native American Heritage Commission (NAHC) maintains two databases to assist cultural resources specialists in identifying cultural resources of concern to California Native Americans, referred to by staff as Native American ethnographic resources. The NAHC Sacred Lands database has records for places and objects that Native Americans consider sacred or otherwise important, such as cemeteries and gathering places for traditional foods and materials. The NAHC Contacts database has the names and contact information for individuals, representing a group or themselves, who have expressed an interest in being contacted about development projects in specified areas. Both applicants and staff request information from the NAHC on the presence of sacred lands in the vicinity of a proposed project and also request a list of Native Americans to whom inquiries would be made to identify both additional cultural resources and any

concerns the Native Americans may have about a proposed project. While the BLM must formally consult, government-to-government, with the federally recognized Native American tribes that have traditional cultural ties to the area in which the project is located, the Energy Commission provides information and sends notices of all public events regarding the project to all Native American groups and individuals whom the NAHC identifies as having an interest in development in the area, whether federally recognized or not.

Results of Native American Consultation

The applicant contacted the NAHC by email on October 17, 2007, to obtain information on known cultural resources and traditional cultural properties and to learn of any concerns Native Americans may have about the GSEP. In addition, they requested a list of Native Americans who have heritage ties to Riverside County and who want to be informed about new development projects there (Farmer et al. 2009, app. E). The NAHC responded on October 19, 2007, with the information that the Sacred Lands File (SLF) database failed to indicate the presence of Native American cultural resources in the immediate GSEP vicinity. The NAHC also forwarded a list of Native American groups or individuals interested in development projects in Riverside County.

On November 26, 2007, the Palm Springs-South Coast Field Office of the BLM sent letters to 28 Native American groups, including those identified by the NAHC, initiating government-to-government consultation for the proposed project. In addition the letter invited comments or concerns regarding potential impacts to cultural resources or areas of traditional cultural importance within the vicinity of the proposed project. On November 23, 2009, BLM sent an additional letter to the Agua Caliente Band of Cahuilla Indians and informational copies to 12 other groups listed in **Cultural Resources Table 4**, noting the *Federal Register* publication of the Notice of Intent (NOI) for the proposed project, stating that in compliance with the National Environmental Policy Act of 1969 (NEPA), as amended, and the Federal Land Policy and Management Act of 1976, as amended, the BLM Palm Springs-South Coast Field Office, together with the Energy Commission, intend to prepare an Environmental Impact Statement (EIS) and Staff Assessment (SA), which may also include an amendment to the California Desert Conservation Area (CDCA) Plan (1980, as amended) for GSEP. In this same notice the BLM announced that it intends to use the NEPA commenting process to satisfy the public involvement process for Section 106 of the National Historic Preservation Act (16 U.S.C. 470f) as provided for in 36 CFR 800.2(d)(3). Publication of the NOI initiated the scoping process to solicit public comments and identify issues (BLM 2009a). The letter urged any concerned Native American groups to utilize the Section 106 process to provide comments or specific concerns.

CULTURAL RESOURCES Table 4
Dates of BLM Inquiries Made to Native American Groups

Native American Group	Contact Person	Dates of Contact with BLM
Agua Caliente Band of Cahuilla Indians	Richard Milanovitch, Chairman Richard Begay and Patty Tuck, Tribal Historic Preservation Officers	11/26/07 NAHC letter from BLM 01/29/08 Reply from Ms. Tuck 05/20/09 Meeting with BLM 06/05/09 Meeting with BLM 11/23/09 NOI letter from BLM 04/23/10 Meeting with BLM and CEC
Ak-Chin Indian Community	Terry Enos, Chairman	11/23/09 Copy of NOI letter
Anza Cahuilla	Contact person unknown	05/20/09 Meeting with BLM 11/05/09 Meeting with BLM
Augustine Band of Cahuilla Mission Indians	Mary Ann Green, Chairperson	11/26/07 NAHC letter from BLM 11/23/09 Copy of NOI letter
Cabazon Band of Mission Indians	John A. James, Chairperson Judy Sapp, Cultural Resources Coordinator	11/26/07 NAHC letter from BLM 12/21/07 Reply from Ms. Sapp 05/20/09 Meeting with BLM 11/05/09 Meeting with BLM 11/23/09 Copy of NOI letter
Cahuilla Band of Indians	Anthony Madrigal, Sr., Chairperson	11/26/07 NAHC letter from BLM 11/23/09 Copy of NOI letter 04/23/10 Meeting with BLM and CEC
Chemehuevi Reservation	Charles Wood, Chairperson	11/26/07 NAHC letter from BLM 11/23/09 Copy of NOI letter 12/09/09 Reply
Cocopah Tribal Council	Sherry Cordova, Chairwoman	11/23/09 Copy of NOI letter
Colorado River Indian Reservation	Daniel Eddy, Jr., Chairman Michael Tsosie, Cultural Contact	11/26/07 NAHC letter from BLM 11/23/09 Copy of NOI letter
Fort McDowell Yavapai Nation	Raphael Bear, President	11/23/09 Copy of NOI letter
Fort Mojave Indian Tribe	Timothy Williams, Chairperson Linda Otero, Director, AhaMakav Cultural Soc.	11/23/09 Copy of NOI letter
Gila River Indian Community Council	Richard Narcia, Governor	11/23/09 Copy of NOI letter
Havasupai Tribe	Rex Tilousi, Chairman	11/23/09 Copy of NOI letter
Hualapai Indian Tribe	Charles Vaughn, Chairman	11/23/09 Copy of NOI letter
Kaibab-Paiute Tribe	Carmen Bradley, Chairwoman	11/23/09 Copy of NOI letter
Los Coyotes Band of Indians	Katherine Staubel, Spokesperson	11/23/09 Copy of NOI letter
Morongo Band of Mission Indians	Richard Martin, Chairperson Brit W. Wilson, Cultural Resources	11/26/07 NAHC letter from BLM 05/20/09 Meeting with BLM 11/05/09 Meeting with BLM 11/23/09 Copy of NOI letter
Pechanga Band of Luiseño Indians	Contact person unknown	05/20/09 Meeting with BLM 11/05/09 Meeting with BLM

Native American Group	Contact Person	Dates of Contact with BLM
Quechan Indian Tribe	Michael Jackson, Sr. President Bridget Nash, Cultural Resources	12/18/07 Contact from Ms. Nash 06/23/08 Contact from Ms. Nash 04/29/09 Contact from Ms. Nash 05/21/09 Reports from BLM 05/29/09 Reports from BLM 06/09/09 Contact from Ms. Nash 09/03/09 Letter from Mr. Jackson 11/23/09 Copy of NOI letter 02/16/10 Letter from Mr. Jackson
Ramona Band of Mission Indians	Manuel Hamilton, Chairperson Joseph Hamilton, Vice Chairperson John Gomez, Environmental Coordinator	11/26/07 NAHC letter from BLM 05/21/09 Meeting with BLM 11/05/09 Meeting with BLM 11/23/09 Copy of NOI letter
Salt River Pima-Maricopa Indian Community Council	Joni Ramos, President	11/23/09 Copy of NOI letter
San Mañuel Band of Mission Indians	Ann Brierty, Environmental Department	11/26/07 NAHC letter from BLM 05/20/09 Meeting with BLM 11/05/09 Meeting with BLM 11/23/09 Copy of NOI letter
Santa Rosa Band of Mission Indians	John Marcus, Chairman Terry Hughes, Tribal Administrator	11/23/09 Copy of NOI letter
Soboba Band of Mission Indians	Robert Salgado, Chairperson Bennae Calac, Cultural Resources Coordinator	11/23/09 Copy of NOI letter
The Hopi Tribe	Wayne Taylor Jr., Chairman	11/23/09 Copy of NOI letter
Tohono O'oodham Nation	Vivian Saunders, Chairwoman	11/23/09 Copy of NOI letter
Torres-Martinez Desert Cahuilla Indians	Raymond Torres, Tribal Administrator William J. Contreras, Cultural Resources Coordinator	11/26/07 NAHC letter from BLM 05/20/09 Meeting with BLM 11/05/09 Meeting with BLM 11/23/09 Copy of NOI letter
Twentynine Palms Band of Mission Indians	Mike Darrell, Chairperson Anthony Madrigal, Jr., CR Specialist	11/26/07 NAHC letter from BLM 05/20/09 Meeting with BLM 11/05/09 Meeting with BLM 11/23/09 Copy of NOI letter 04/23/10 Meeting with BLM and CEC
Yavapai-Apache Nation	Jamie Fuller, Chairman	11/23/09 Copy of NOI letter
Yavapai-Prescott Indian Tribe	Ernie Jones, Sr., President	11/23/09 Copy of NOI letter

Tetra Tech reports that no responses to the initial 2007 BLM letter were received by the time the final draft of the cultural resources technical report was included in the AFC in November, 2009 (Farmer et al. 2009, app. E). However the BLM reports a number of contacts and meetings between November, 2007, and December, 2009. The details of these contacts are listed in **Cultural Resources Tables 4** and **5**. A number of tribes—Agua Caliente Band of Cahuilla Indians, Morongo Band of Mission Indians, Cabazon Band of Mission Indians, Torres-Martinez Desert Cahuilla Indians, Pechanga Band of Luiseño Indians, Anza Cahuilla, Ramona Band of Mission Indians, Twentynine Palms

Band of Mission Indians, and San Mañuel Band of Mission Indians—attended meetings with BLM staff about various solar energy and transmission line projects in the region. In general the tribes expressed concern over possible damage to cultural resources, cultural landscapes, and traditional cultural properties. In addition they expressed interest in receiving copies of archaeological reports after cultural resources surveys of the GSEP footprint and linear facilities corridors were complete and being informed about the amount of damage to these resources expected to take place. It is unclear which of these groups is specifically interested in GSEP, other than the three tribes discussed below.

Four tribes—the Quechan Tribe, the Agua Caliente Band of Cahuilla Indians, the Cabazon Band of Mission Indians, and the Chemehuevi Reservation—responded to BLM letters about GSEP. Originally, the Agua Caliente Band of Cahuilla Indians stated that they were not interested in consulting about GSEP as it is outside of tribal traditional use areas. More recently, however, they have participated in several meetings organized by the BLM and expressed concern (**Cultural Resources Table 5**). The Cabazon Band of Mission Indians and the Chemehuevi Reservation expressed general concerns about the potential destruction of cultural resources and traditional cultural properties.

The Quechan Tribe has expressed the most interest in GSEP, and has contacted BLM multiple times. Their concerns have been summarized in a formal letter written in response to the proposed Programmatic Environmental Impact Statement for Solar Energy Development for the six southwestern states. In this letter they consider the area around Blythe, presumably including the GSEP site footprint and linear facilities corridor, to be part of the Quechan Tribe's traditional land. To alleviate potential impacts to cultural resources, spiritual landscapes, or traditional cultural properties (TCPs) they request to be consulted at the inception of the project, prior to any plans being finalized. They further request that the clustering of these large multi-thousand-acre projects be prohibited, that traditional areas rich in cultural resources be avoided, that projects be placed on land that has already been disturbed, and that existing buildings be favored over undisturbed land for the placement of solar panels. Finally, they emphasize their concern over indirect as well as direct impacts to cultural resources. They request that BLM not "focus exclusively on archaeological site impacts, while failing to fully address impacts to resources such as cultural landscapes and TCPs" (Jackson 2009, p. 3). An additional letter from the Quechan Tribe was sent on February 16, 2010. In this letter President Jackson expresses doubt that the appropriate Section 106 consultation process can be completed within the "fast-track" timeframe that requires a final Record of Decision by September, 2010. He further comments that the Tribe does not believe that the "fast-track" projects meet the regulatory criteria for the use of a Programmatic Agreement.

CAlifornians for Renewable Energy (CARE) members favor a "no action" alternative. Among their concerns are several related to cultural resources. Alfredo Acosta Figueroa, a CARE member and member of the La Cuna de Aztlan Sacred Sites Protection Circle notes that the proposed project will "despoil a portion of the desert wilderness" (CARE 2009a, p. 2), which is sacred to the Uto-Aztecan language speakers. Further, he mentions that solar energy projects in general are "antithetical to the sacred sites purpose and appear to be intended to essentially trap the Creator

Quetzalcoatl as the deity descends at sun down" (CARE 2009a, p. 2). In particular CARE is concerned about damage to sacred petroglyph sites—one in the Palen Mountains and another at McCoy Spring National Register District—and the ancient trails that run between them. Knowledge of these sites is part of local traditional knowledge and has also been documented by archaeologists including Johnson and Johnstone (1957). According to the descriptions provided by Mr. Figueroa and by the archaeological maps, portions of several prehistoric trails potentially associated with McCoy Spring National Register District appear to pass near to or through the GSEP site footprint and linear facility corridor (McCarthy 1993, Fig. 10). In addition, staff may have identified the sacred place in the Palen Mountains, mentioned by Mr. Figueroa, as CA-Riv-0980, a place where two prehistoric trails intersect with several small boulders bearing petroglyphs. Also present is a historic-period inscription which says: "Watter in left hand gulch about 200 yds J B 1873."

Further comments by CARE are discussed in the "Response to Agency and Public Comments subsection."

CULTURAL RESOURCES Table 5
Details of Communications Between BLM and Native American Groups

Date	Group	Communication Details
12/18/07	Quechan Tribe	Bridget Nash replied: Expressed concerns for the potential impacts affiliated with the Tribe. Requests a copy of the cultural report once it is completed.
12/21/07	Cabazon Band of Mission Indians	Judy Sapp replied: If there are substantial impacts, the Tribe will request an in-person meeting with Morongo Tribal Historian and BLM staff. She requested additional cultural resource information and for the BLM to provide a report when it becomes available.
01/29/08	Agua Caliente Band of Cahuilla Indians	Patty Tuck replied: The project is beyond both the Reservation lands and traditional use areas of the Tribe. Suggests contacting the Augustine Band of Cahuilla Indians, the Cabazon Band of Mission Indians, the Twentynine Palms Band of Mission Indians, and the Torres-Martinez Desert Cahuilla Indians.
06/23/08	Quechan Tribe	Bridget Nash requests archaeological reports.
04/29/09	Quechan Tribe	A telephone and e-mail conversation between Bridget Nash (Quechan Tribe) and Wanda Raschkow (BLM); Ms. Nash sends requested reports and Ms. Raschkow sends e-mail regarding project status.
05/20/09	Multiple Tribes	A meeting was held to discuss various solar energy projects and transmission lines in the Chuckwalla and Coachella Valleys. Attendees included BLM staff C. Dalu, R. Queen, and J. Kalish and representatives from the Agua Caliente Band of Cahuilla Indians, Morongo Band of Mission Indians, Cabazon Band of Mission Indians, Torres-Martinez Desert Cahuilla Indians, Pechanga Band of Luiseño Indians, Anza Cahuilla, Ramona Band of Mission Indians, Twentynine Palms Band of Mission Indians, and San Mañuel Band of Mission Indians.
05/21/09	Quechan Tribe	A letter was posted to Ms. Nash (Quechan Tribe) from BLM Palm Springs Field Office providing requested reports. C. Dalu sent Tetra Tech's archaeology reports.
05/29/09	Quechan Tribe	A package was posted to Ms. Nash (Quechan Tribe) from BLM Palm Springs Field Office providing requested reports.
06/05/09	Agua Caliente Band of Cahuilla Indians	Meeting with BLM and representatives of the Agua Caliente Band of Cahuilla Indians to discuss various solar projects.

Date	Group	Communication Details
06/09/09	Quechan Tribe	A telephone conversation between Bridget Nash (Quechan Tribe) and Wanda Raschkow (BLM); Ms. Raschkow reports status of project. Ms. Nash requests report. Ms. Raschkow indicates that a data-sharing agreement will be necessary before providing archaeological reports and other sensitive data.
11/05/09	Multiple Tribes	Meeting with BLM to discuss various solar projects. Attendees included BLM staff and representatives from the Agua Caliente Band of Cahuilla Indians, Morongo Band of Mission Indians, Cabazon Band of Mission Indians, Torres-Martinez Desert Cahuilla Indians, Pechanga Band of Luiseno Indians, Anza Cahuilla, Ramona Band of Mission Indians, Twentynine Palms Band of Mission Indians, and San Manuel Band of Mission Indians. Tribes request a monthly report regarding all projects. The Agua Caliente Band of Cahuilla Indians requests a site visit.
09/03/09	Quechan Tribe	BLM receives a letter from President Mike Jackson, Sr., commenting on the Programmatic Environmental Impact Statement regarding solar development being developed for the six southwestern states. Concerns expressed over cultural resources and traditional cultural properties.
12/09/09	Chemehuevi Reservation	A telephone conversation between C. Dalu and a representative of the Chemehuevi Reservation expressing concern about the impact of Genesis, Palen, and Blythe solar projects on cultural resources and traditional cultural properties.
12/23/09	La Cuna de Aztlan Sacred Sites Protection Circle	This is a group composed of members from multiple tribes dedicated to the protection of sacred sites in traditional territories in the Colorado and Mojave Deserts. Their comments were included in a formal letter from the CAlifornians for Renewable Energy (CARE) in response to the BLM/CEC request for comments on the GSEP NOI. Concerned about damage to cultural resources such as trails and springs, in particular McCoy Spring.
02/16/10	Quechan Tribe	BLM receives a letter from President Mike Jackson, Sr., commenting on the regulatory approval schedule for the solar “fast-track” projects including Genesis. Concerns expressed about the ability of BLM to consult appropriately with the Tribe in the time frame envisioned. Also suggests that a Section 106 PA is inappropriate for these projects.

Date	Group	Communication Details
04/23/10	Multiple Tribes	Meeting with BLM and CEC to discuss cultural resources impacts for the I-10 Corridor solar projects (Genesis, Blythe, Palen). Attendees included BLM and CEC cultural resources staff, CA SHPO, cultural resources specialists for the applicants, and representatives from the Agua Caliente Band of Cahuilla Indians, Cahuilla Band of Indians, and the Twentynine Palms Band of Mission Indians.

Field Inventory Investigations

To facilitate the environmental review of their projects, applicants conduct surveys to identify previously unrecorded cultural resources in or near the GSEP site footprint and linear facilities corridor. These surveys include a pedestrian archaeological survey and a built-environment windshield survey. The applicant includes the acquired new survey information as part of the information provided to staff in the AFC and may undertake additional field research, including geoarchaeological studies and site testing, to respond to staff's data requests. Staff may also undertake additional field research to supplement information provided by the applicant.

BLM's Class I survey, mentioned above, is an archival exercise. Under BLM's protocol for inventory-level cultural resources investigations on lands for which a Right-of-Way grant has been requested, after the Class I survey, the applicant generally undertakes field research, sequentially, at two increasing levels of intensity. A Class II survey, sometimes referred to as a "reconnaissance survey," is a statistically based sample survey designed to help characterize the probable density, diversity, and distribution of archaeological sites in a large area by interpreting the results of surveying (walking across and examining the ground surface) limited and discontinuous portions of the target area. A Class III survey is a continuous, intensive survey of an entire target area, aimed at locating and recording all archaeological properties that have surface indications, by walking close-interval parallel transects until the area has been thoroughly examined (BLM 2004, sec. 8110.21).

In summary, the archaeologists for the applicant employed six phases of fieldwork to inventory the cultural resources in the GSEP site footprint and linear facilities corridor: 2 geoarchaeological studies, 3 intensive pedestrian surveys, and 1 built-environment survey (**Cultural Resources Table 6**). Class III fieldwork identified 148 cultural resources which summarized below. These totals do not include the Class II survey but do include the various GSEP linear corridor alternatives. Some of linear corridor sites would be avoided. If a secondary access road is required (CEC 2010g), a fourth Class III intensive pedestrian survey may be required for the new route.

CULTURAL RESOURCES Table 6
All Cultural Resources Identified in GSEP PAAs and Vicinity

	Pre-historic Sites	Historic Sites	Multi-Component	Un-known Sites	Built Environ-ment	Pre-historic Isolates	Historic Isolates	Total
McCarthy 1990s Survey	224	0	0	0	0	0	0	224
Previously Identified Tetra Tech	68	14	4	2	0	69	10	167
Tetra Tech Class III	26	20	2	0	2	72	26	148
Total	318	34	6	2	2	141	36	**539**

Results of Pedestrian Archaeological Survey

The archaeologists for the applicant (Tetra Tech) undertook four distinct intensive pedestrian archaeological surveys of the proposed GSEP site footprint and linear facilities corridor alternatives. Class II survey covered 1,896 acres and Class III surveys covered 3,534.3 acres. In total the number of acres surveyed by Tetra Tech for the GSEP project is 5,430.3.

The initial survey was a BLM Class II Sampling Field Inventory, which was conducted to facilitate decision-making regarding the placement of the project footprint. The results of this survey were included in the "CHRIS Results" subsection because this information helped inform the boundaries of the Class III survey area. During the Class II survey 20 percent of the original GSEP site footprint (9,480 acres) was surveyed. To identify locations to survey, this area was divided into 40-acre parcels along eighth-section lines. Forty-eight 40-acre parcels were then randomly selected from a total sample universe of 237 using a random numbers table. In total, 1,896 acres were surveyed. The field work was conducted between November, 2007, and January, 2008.

The second survey was an intensive BLM Class III survey of the 2,494-acre proposed project facility plus a perimeter buffer of 200 feet. The field work was conducted between March and April, 2009. Sites that had been recorded in this area during the initial Class II survey were briefly revisited during the Class III survey and updated if necessary.

The third pedestrian survey was an intensive BLM Class III survey of the proposed linear facilities corridor. Survey coverage included the proposed linear alignment, plus 75 feet to either side of the center line of the routes. A total of 449.5 acres were surveyed. The fieldwork was conducted in June of 2009.

The fourth pedestrian survey was an intensive BLM Class III survey of a number of linear facilities corridor alternatives. Survey coverage included the corridor alternatives, plus 75 feet to either side of the center line of the routes. A total of 590.8 acres were surveyed. The fieldwork was conducted in January and February of 2010.

An additional intensive BLM Class III survey of the recently proposed secondary access road may be required (CEC 2010g). Survey coverage is expected to be similar to other Tetra Tech linear corridor surveys.

The four surveys used identical methods and encountered similar working conditions. Two-to ten-person survey teams walked at 15-m intervals looking for archaeological remains. Each team sought to relocate previously recorded sites and assess their current condition. For new resources, they defined three or more artifacts and/or features as a site and two or fewer as an isolate. They used an arbitrary distance of 50 m between artifacts and features to separate deposits into individual sites. They used handheld GPS units to plot the locations of features, sites, and isolated artifacts. All sites and architectural resources over 45 years of age with the data required by Department of Parks and Recreation (DPR) series 523 forms. They photographed site overviews and diagnostic artifacts, drew site sketch maps, compiled artifact and feature descriptions, and made observations on the terrain and ecology. Once a site was recorded, the team removed all flagging tape. Overall visibility in all of the surveyed areas was good, and work days were sunny and clear with occasional days with extremely high winds. Tetra Tech undertook no subsurface testing and collected no artifacts (Farmer et al. 2009, pp. 58–59).

During the second, third, and fourth intensive pedestrian archaeological surveys, 50 new cultural resources and 98 cultural isolates were found within 3,534.3 acres (Farmer et al. 2009). This total only includes sites found in the proposed project facility footprint and linear facilities corridor (and alternatives) areas. Sites found during the Class II survey are discussed in the “CHRIS Results” subsection above. The newly identified archaeological sites consisted of 26 prehistoric, 20 historic-period, and 2 multi-component archaeological sites, and 2 built environment resources. This total includes site P33-17977, which was originally recorded as an isolate. Staff has included it as a site here since it contains 11 sherds. The archaeological isolates consisted of 72 prehistoric items, primarily lithics, with occasional ground stone and ceramics. Twenty-six historic-period isolates were identified, mainly glass and metal. The prehistoric archaeological site types include lithic scatters of stone tool manufacturing and maintenance debris and potential temporary campsites. The historical archaeological site types consist of debris and refuse scatters. Many appear to be temporary camps associated with DTC/C-AMA maneuvers. The isolate types include prehistoric lithics and ceramics as well as historic-period refuse.

Cultural Resources Table 7 summarizes sites found by other projects (n=34), sites found in Tetra Tech’s GSEP Class II survey (n=54), and sites found in Tetra Tech’s three GSEP Class III surveys (n=50). In total, 138 sites are included in this table. Two-hundred and twenty-four of the sites identified by McCarthy (1993), which staff considers to be within the ethnographic PAA, were not identified by Tetra Tech and so are not included in Table 7. Rather, see **Cultural Resources Table 8**, below.

In many cases, however, for the newly identified sites, site function and the time periods represented were unspecified, despite the presence of artifacts that could provide the relevant information. This was particularly the case for the historical archaeological sites. These issues were not resolved by Data Requests. Staff attempted to clarify some

of these issues with a more detailed inspection of all of the relevant site forms. The information in **Cultural Resources Table 7** was primarily generated by staff.

CULTURAL RESOURCES Table 7
Cultural Resources Identified by Tetra Tech
Located in the GSEP PAA and Vicinity

Resource	Description	When Found	Period/ Era	Location	Info Source
Prehistoric					
CA-Riv-0053T	Trail: 22+ km segment, leads from Colorado River to McCoy Spring around south and west side of McCoy Mountains, multiple associated sites and features.	Previously known	Prehistoric	In Ethno-graphic PAA	McCarthy 1993
CA-Riv-0132 (P33-00132)	Temporary Camp: McCoy Spring National Historic District, 40 acres, at spring, 18 trails, 3000+ rock art images, 1000+ artifacts, midden, rock rings, cleared circles.	Previously known	Prehistoric	In Ethno-graphic PAA	McCarthy 1986, 1993
CA-Riv-0260 (P33-00260)	Temporary Camp: 62 acres near lake edge, 1000+ artifacts, ceramics, lithics, ground stone, FAR. 5 concentrations, buried deposits, pot drops.	Previously known	Prehistoric	Linear Corridor	Ramirez 2008 (update)
CA-Riv-0663 (P33-00663)	Temporary Camp: 186 acres, 1000+ artifacts, lithics (jasper, quartzite, rhyolite, chert, and chalcedony) 1 Corner Notched projectile point fragment, 1 biface fragment, ceramics (Parker buffware and Tizon brownware, and greyware), mano and metate fragments some of green shale, FAR, and 1 rock alignment. May include CA-Riv-6900.	Previously known	Prehistoric	Linear Corridor	Pallette et al., 1989 Farmer et al., 2010
P33-01216	Lithic Scatter: Widely dispersed, along maximal lake shoreline on gravel terrace, debitage 7 flakes of chert/jasper, 1 hammerstone/core.	Previously known	Prehistoric	Vicinity	McCarthy 1977
P33-01222	Temporary Camp: located near dry lake shore (n=100+), 7 loci of metates and manos, debitage of quartz and chalcedony cores and flakes. Site disturbed by ORV.	Previously known	Prehistoric	In Ethno-graphic PAA	Cook 1976
P33-01517	Lithic Scatter: Debitage of jasper and quartz.	Previously known	Prehistoric	Vicinity	Ritter 1975
P33-01543	Artifact Scatter: 3 metate fragments, 2 flakes.	Previously known	Prehistoric	Vicinity	Morim 1976
P33-01818	Ceramic Scatter: 53 sherds, Tumco Buff, pot drop	Previously known	Prehistoric	In Ethno-graphic PAA	Carrico 1980

Resource	Description	When Found	Period/ Era	Location	Info Source
P33-01840	Artifact Scatter: just south of I-10, 2 pot drops (n=71), 2 lithics, 1 ground stone fragment.	Previously known	Prehistoric	In Ethno-graphic PAA	Musser & Boyer 1976
P33-02157	Temporary Camp: along lake edge, near I-10, artifacts (n=30+), ceramic (buff/ Tizon brown ware), ground stone fragments (metates/manos), lithic flakes (quartz/green andesitic meta-volcanic).	Previously known	Prehistoric	In Ethno-graphic PAA	Cardenas 1981
CA-Riv-2159 (P33-02159)	Temporary Camp: (n=100s) with 5 loci, and 1 pot drop (n=7), along lake edge, lithics (flakes: rhyolite, basalt, chalcedony, agate, jasper, chert, granite, andesite) and ground stone (manos, metates, hammerstones).	Previously known	Prehistoric	In Ethno-graphic PAA	Cardenas 1981
P33-02206	Lithic Scatter: 6 flakes (chalcedony, quartz, opal), 1 quartzite cobble core.	Previously known	Prehistoric	Vicinity	Hammond 1981
P33-03129	Trail: 3.5 km long, leads to the southwestern side of the McCoy Mountains.	Previously known	Prehistoric	In Ethno-graphic PAA	McCarthy 1991
P33-03801	Ceramic Scatter: (n=5) Parker buffware sherds, pot drop	Previously known	Prehistoric	In Ethno-graphic PAA	Pallette et al. 1989
P33-03802	Artifact Scatter: near lake shore, 1 metate fragment, 2 chalcedony flakes, 1 quartzite hammerstone, fractured cobbles, and possible green shale hearth feature.	Previously known	Prehistoric	Vicinity	Pallette et al. 1989
P33-03808	Ceramic Scatter: (n=7) Tumco Red-on-buff sherds, pot drop	Previously known	Prehistoric	In Ethno-graphic PAA	Mooney & Associates 1990
P33-03809	Ceramic Scatter: (n=7+) Tumco buff sherds, pot drop	Previously known	Prehistoric	In Ethno-graphic PAA	Mooney & Associates 1990
CA-Riv-6170 (P33-08655)	Lithic Scatter: along dry lake shore, lithic debitage (quartzite, agate, chalcedony, chert, jasper), 1 chert Rose Spring projectile point (A.D. 200 to 1100), 1 point and drill fragment.	Previously known	Prehistoric	Vicinity	Mitchell 1998
CA-Riv-6900	Temporary Camp:(100+), lithics, ground stone. Possibly part of CA-Riv-0663.	Previously known	Prehistoric	Avoided	BLM 1977
CA-Riv-9032 (P33-17416)	Lithic Scatter: Debitage (n=14); two cores.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9033 (P33-17417)	Lithic Scatter: Debitage (n=39); two cores.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9036 (P33-17420)	Artifact Scatter: Debitage (n=3), mano, fire-affected rock (FAR).	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009

Resource	Description	When Found	Period/ Era	Location	Info Source
CA-Riv-9037 (P33-17421)	Temporary Camp: near lake shore, artifacts (n=17), lithics, ground stone, 1 brownware sherd, 5 concentrations of FAR.	GSEP Class II	Prehistoric	In Ethno-graphic PAA	Farmer et al. 2009
CA-Riv-9038 (P33-17422)	Artifact Scatter: Debitage (n=7), FAR.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9039 (P33-17423)	Artifact Scatter: Debitage (n=3), and mano fragment.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9040 (P33-17424)	Lithic Scatter: Debitage (n=22), and flake tool.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9041 (P33-17425)	Lithic Scatter: Debitage (n=11), and core.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9042 (P33-17426)	Lithic Scatter: Debitage (n=2), core.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9043 (P33-17427)	Artifact Scatter: Debitage (n=7), core, ground stone.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9044 (P33-17428)	Artifact Scatter: Debitage (n=20+), and mano.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9045 (P33-17429)	Lithic Scatter: Debitage (n=4), and cores.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9046 (P33-17430)	Artifact Scatter: near lake shore (n=22), 2 ground stone, 2 FAR, 18 lithics	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9047 (P33-17431)	Lithic Scatter: Debitage (n=5)	GSEP Class II	Prehistoric	In Facility Footprint	Farmer et al. 2009
CA-Riv-9048 (P33-17432)	Lithic Scatter: Debitage (n=10).	GSEP Class II	Prehistoric	In Facility Footprint	Farmer et al. 2009
CA-Riv-9049 (P33-17433)	Artifact Scatter: Debitage (n=2), core, ground stone.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9050 (P33-17434)	Lithic Scatter: (n=3) Debitage.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9051 P33-17435	Lithic Scatter: (n=5), debitage and 1 core.	GSEP Class II	Prehistoric	In Facility Footprint	Farmer et al. 2009
CA-Riv-9052 (P33-17436)	Artifact Scatter: Debitage (n=2), core, and ground stone.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9053 (P33-17437)	Lithic Scatter: Debitage (n=3), and cores.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9054 (P33-17438)	Lithic Scatter: Debitage (n=5).	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9055 (P33-17439)	Temporary Camp: near lake shore, artifacts (n=53) including debitage, ground stone, ceramic fragments, FAR[10] concentration.	GSEP Class II	Prehistoric	In Ethno-graphic PAA	Farmer et al. 2009
CA-Riv-9056 (P33-17440)	Lithic Scatter: (n=5) Debitage, biface, and hammerstone.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9057 (P33-17441)	Artifact Scatter: Debitage (n=6), core, and metate fragment.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9060 (P33-17444)	Artifact Scatter: (n=6) 4 flakes, 1 metate fragment and 1 sherd.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9061 (P33-17445)	Lithic Scatter: Debitage (n=6).	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9062 (P33-17446)	Artifact Scatter: (n=16) Debitage and mano fragments.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009

[10] FAR is fire-affected rock—rock that shows evidence of having been in prolonged contact with fire.

Resource	Description	When Found	Period/ Era	Location	Info Source
CA-Riv-9064 (P33-17448)	Temporary Camp: near lake edge, artifacts (n=120+), 2 concentrations, 3 projectile points, 2 bifaces, 2 ground stone. Possibly Archaic period.	GSEP Class II	Prehistoric	In Ethno-graphic PAA	Farmer et al. 2009
CA-Riv-9065 (P33-17449)	Artifact Scatter: possible hearth with 20+ FAR, 2 metate fragments, and 2 chert flakes.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9066 (P33-17450)	Lithic Scatter: (n=8) lithic debitage.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9067 (P33-17451)	Lithic Scatter: (n=38) lithics, 1 possible Desert side notch projectile point, 1 biface. Probably part of CA-Riv-9068.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9069 (P33-17453)	Lithic Scatter: Debitage (n=10+).	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9070 (P33-17454)	Lithic Scatter: (n=3) Debitage, 1 core.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9071 (P33-17455)	Temporary Camp: 78 acres, 4 concentrations (n=250+), lithics, ceramics, ground stone, FAR.	GSEP Class II	Prehistoric	In Ethno-graphic PAA	Farmer et al. 2009
CA-Riv-9072 (P33-17456)	Temporary Camp: 350 acres, artifacts (n=1000+), debitage, Rose Spring projectile point (AD 200 to 1100), brownware sherds, FAR, ground stone. May be part of CA-Riv-9078.	GSEP Class II	Prehistoric	In Facility Footprint	Farmer et al. 2009
CA-Riv-9073 (P33-17457)	Lithic scatter: (n=4), debitage and 1 tool.	GSEP Class II	Prehistoric	Linear Corridor	Farmer et al. 2009
CA-Riv-9075 (P33-17459)	Artifact Scatter: (n=7) debitage, 1 flake tool, 1 metate.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9076 (P33-17460)	Lithic Scatter: Debitage (n=5).	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9078 (P33-17462)	Temporary Camp: (n=3000+) artifacts, 2000 ground stone, lithics, FAR. Milling tool manufacturing? May be part of CA-Riv-9072.	GSEP Class II	Prehistoric	In Ethno-graphic PAA	Farmer et al. 2009
CA-Riv-9079 (P33-17463)	Temporary Camp: artifacts (n=500+), lithics, 5 ground stone, 1 marine clam shell fragment.	GSEP Class II	Prehistoric	In Ethno-graphic PAA	Farmer et al. 2009
CA-Riv-9080 (P33-17464)	Lithic Scatter: (n=4) Debitage.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9081 (P33-17465)	Lithic Scatter: (n=7) Debitage.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9083 (P33-17467)	Lithic Scatter: (n=6+) Debitage.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9084 (P33-17468)	Artifact Scatter: 17 acres, (n=96), 2 concentrations, lithic debitage and tools, 8 ground stone, 1 Olivella shell bead (1100 cal AD to Contact), 1 marine shell.	GSEP Class II	Prehistoric	In Facility Footprint	Farmer et al. 2009

Resource	Description	When Found	Period/ Era	Location	Info Source
CA-Riv-9206 (P33-17775)	Artifact Scatter: (n=5) Debitage, 1 mano	GSEP Class III	Prehistoric	In Facility Footprint	Farmer et al. 2009
CA-Riv-9207 (P33-17776)	Lithic Scatter: Debitage (n=5), core.	GSEP Class III	Prehistoric	In Facility Footprint	Farmer et al. 2009
CA-Riv-9208 (P33-17777)	Lithic Scatter: (n=8) Debitage, 1 core	GSEP Class III	Prehistoric	In Facility Footprint	Farmer et al. 2009
CA-Riv-9209 (P33-17778)	Artifact Scatter: (n=24) lithics, and ground stone.	GSEP Class III	Prehistoric	In Facility Footprint	Farmer et al. 2009
CA-Riv-9210 (P33-17779)	Artifact Scatter: (n=13) lithics and ground stone.	GSEP Class III	Prehistoric	In Facility Footprint	Farmer et al. 2009
CA-Riv-9212 (P33-17781)	Lithic Scatter: (n=6) lithics, 1 Desert side-notched projectile point (AD 1100 to Contact).	GSEP Class III	Prehistoric	In Facility Footprint	Farmer et al. 2009
CA-Riv-9215 (P33-17784)	Lithic Scatter: (n=25) lithics, 1 unidentified projectile point.	GSEP Class III	Prehistoric	In Facility Footprint	Farmer et al. 2009
CA-Riv-9216 (P33-17785)	Artifact Scatter: near lake shore, (n=7), 2 concentrations, lithics, 1 mano, 1 biface.	GSEP Class III	Prehistoric	In Facility Footprint	Farmer et al. 2009
CA-Riv-9217 (P33-17786)	Artifact Scatter: (n=3) 2 lithic debitage, 1 brownware sherd.	GSEP Class III	Prehistoric	In Facility Footprint	Farmer et al. 2009
CA-Riv-9218 (P33-17787)	Lithic Scatter: (n=3) 2 flakes, 1 scraper.	GSEP Class III	Prehistoric	In Facility Footprint	Farmer et al. 2009
CA-Riv-9219 (P33-17788)	Lithic Scatter: (n=3) flakes	GSEP Class III	Prehistoric	In Facility Footprint	Farmer et al. 2009
CA-Riv-9220 (P33-17789)	Artifact Scatter: (n=94) lithics, ground stone, Cottonwood leaf-shaped projectile point	GSEP Class III	Prehistoric	In Facility Footprint	Farmer et al. 2009
CA-Riv-9221 (P33-17770)	Lithic Scatter: (n=8) Debitage.	GSEP Class III	Prehistoric	In Facility Footprint	Farmer et al. 2009
CA-Riv-9222 (P33-17771)	Lithic Scatter: (n=4) Debitage.	GSEP Class III	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9223 (P33-17772)	Lithic Scatter: (n=20) Debitage.	GSEP Class III	Prehistoric	In Facility Footprint	Farmer et al. 2009
CA-Riv-9226 (P33-17795)	Temporary Camp: near lake shore (n=100+), lithics, 3 brownware sherds, 70 FAR, ground stone.	GSEP Class III	Prehistoric	In Ethno-graphic PAA	Farmer et al. 2009
CA-Riv-9227 (P33-17796)	Artifact Scatter: (n=18), lithics, brownware sherds (n=14) pot drop, 1 marine shell fragment	GSEP Class III	Prehistoric	Linear Corridor	Farmer et al. 2009
CA-Riv-9229 (P33-17798)	Artifact Scatter: Debitage (n=6); mano, metate fragment, cobble choppers	GSEP Class III	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9249 (P33-18003)	Ceramic Scatter: Brownware sherds (n=20) pot drop.	GSEP Class III	Prehistoric	Linear Corridor	Farmer et al. 2009
CA-Riv-9250 (P33-18004)	Artifact Scatter: (n=75) 1 concentration with 2 pot drops (33 and 29 sherds) Brownware sherds, 9 lithics, 3 FAR.	GSEP Class III	Prehistoric	In Ethno-graphic PAA	Farmer et al. 2009
CA-Riv-9255 (P33-18009)	Artifact Scatter: (n=40+) artifacts, 10 Brownware “pot drop” sherds, 4 Brownware sherds, 3 Redware sherds, lithics, 3 FAR, 1 ground stone.	GSEP Class III	Prehistoric	Linear Corridor	Farmer et al. 2009

Resource	Description	When Found	Period/ Era	Location	Info Source
CA-Riv-9256 (P33-18010)	Lithic Scatter: Debitage (n=6), 1 biface fragment	GSEP Class III	Prehistoric	Linear Corridor	Farmer et al. 2009
CA-Riv-9257 (P33-18011)	Lithic Scatter: (n=4) debitage.	GSEP Class III	Prehistoric	Linear Corridor	Farmer et al. 2009
CA-Riv-9260 (P33-18014)	Artifact Scatter: (n=108+) artifacts, 100 Brownware "pot drop" sherds, 7 other Brownware sherds, 1 chert uniface.	GSEP Class III	Prehistoric	In Ethno-graphic PAA	Farmer et al. 2009
P33-13599	Lithic Scatter: (n=2) tertiary jasper flakes	Previously known	Prehistoric	Vicinity	Mooney & Associates 2004
P33-17977	Ceramic Scatter: (n=11) Brownware sherds pot drop	GSEP Class III	Prehistoric	In Ethno-graphic PAA	Farmer et al. 2009
P33-17998	Artifact Scatter: (n=4) 2 flakes, 2 FAR	GSEP Class III	Prehistoric	Linear Corridor	Farmer et al. 2009
CA-Riv-9034 (P33-17418)	Artifact Scatter: (n=7) lithics, 1 mano fragment.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
CA-Riv-9068 (P33-17452)	Artifact Scatter: artifacts (n=60), debitage, 2 ground stone, 8 lithic tools. Probably part of CA-Riv-9067.	GSEP Class II	Prehistoric	Avoided	Farmer et al. 2009
P33-01131	Artifact Scatter: Widely dispersed low density pot drop: 50 Tizon brownware sherds, 1 mano, 1 core fragment.	Previously known	Prehistoric	In Ethno-graphic PAA	Dittman 1981
Historic-Period					
P33-01132	Hopkins Well Site, constructed in 1910.	Previously known	Historic	Vicinity	Metcalf 1982, Cowan 1976
P33-01483	Historic Feature: Military mound, horseshoe-shaped, low earth mound. (1940s)	Previously known	Historic	Vicinity	Crowley 1978
P33-13597	Refuse Scatter	Previously known	Historic	Vicinity	Mooney & Associates 2004
P33-13598	Refuse Scatter: (n=8+) WW II era cans.	Previously known	Historic	Linear Corridor	Mooney & Associates 2004
P33-13655	Historic Feature and Refuse Scatter: Possible WW II foxholes and cans (1940s)	Previously known	Historic	Avoided	Mooney & Associates 2004
P33-14146	Refuse Scatter	Previously known	Historic	Vicinity	Mooney & Associates 2005
P33-14170	Refuse Scatter	Previously known	Historic	Vicinity	Mooney & Associates 2005
P33-14171	Two-Track Road	Previously known	Historic	Vicinity	Mooney & Associates 2005

Resource	Description	When Found	Period/ Era	Location	Info Source
P33-17326	Refuse Scatter	Previously known	Historic	Vicinity	ICF Jones & Stokes 2008
CA-Riv-9035H (P33-17419)	Refuse Scatter: Cans, bottle glass, misc.	GSEP Class II	Historic	Avoided	Farmer et al. 2009
CA-Riv-9059H (P33-17443)	Refuse Scatter: Can scatter. Prehistoric FDLA-Iso-10 recorded within site boundaries.	GSEP Class II	Historic	Avoided	Farmer et al. 2009
CA-Riv-9063H (P33-17447)	Refuse Scatter: Cans, spoon (military), pliers.	GSEP Class II	Historic	Avoided	Farmer et al. 2009
CA-Riv-9074H (P33-17458)	Refuse Scatter: WW II era cans and bottles.	GSEP Class II	Historic	Avoided	Farmer et al. 2009
CA-Riv-9077H (P33-17461)	Refuse Scatter: Cans and bottles (1940s).	GSEP Class II	Historic	Avoided	Farmer et al. 2009
CA-Riv-9203H (P33-17772)	Refuse Scatter: Pull-tab aluminum cans, food cans, bottle (1954–pres)	GSEP Class III	Historic	In Facility Footprint and Linear Corridor	Farmer et al. 2009
CA-Riv-9204H (P33-17773)	Refuse Scatter: Can scatter, bottles (1932-1953)	GSEP Class III	Historic	In Facility Footprint	Farmer et al. 2009
CA-Riv-9211H (P33-17780)	Refuse Scatter: Cans, bottle glass, 1934 penny	GSEP Class III	Historic	In Facility Footprint	Farmer et al. 2009
CA-Riv-9213H (P33-17782)	Refuse Scatter: Approximately 60 cans.	GSEP Class III	Historic	In Facility Footprint	Farmer et al. 2009
CA-Riv-9214H (P33-17783)	Refuse Scatter: Approximately 10 cans.	GSEP Class III	Historic	In Facility Footprint	Farmer et al. 2009
CA-Riv-9225H (P33-17794)	Refuse Scatter: 7 cans, mess-kit fork (1940s military?)	GSEP Class III	Historic	Avoided	Farmer et al. 2009
CA-Riv-9228H (P33-17797)	Refuse Scatter: 10 cans, bottle base (1938-1951), bottle base (1916-1931), razor blade, glass fragments (1940s military?)	GSEP Class III	Historic	Linear Corridor	Farmer et al. 2009
CA-Riv-9230H (P33-17799)	Historic Feature and Refuse Scatter: stake alignment and 30+ C-ration cans, 13 other cans (1940s military?)	GSEP Class III	Historic	Avoided	Farmer et al. 2009
CA-Riv-9245H (P33-17999)	Refuse Scatter: 8 cans, “New Texaco Motor Oil” can (c. 1937), 1 “Dietz All Weather” kerosene construction flare, Aladdin Industries “Aladdins Economy Thermos Bottle”	GSEP Class III	Historic	Linear Corridor	Farmer et al. 2009
CA-Riv-9246H (P33-18000)	Refuse Scatter: 1 metal shoe last, 2 small donkey/pony shoes, 1 brass compass w/plastic lens, 5 C-ration cans, 1 Prince Albert style tobacco tin, 1 white milk glass jar w/metal lid embossed Mentholatum/ Reg/ Trade/ Mark (c.1960-post)	GSEP Class III	Historic	Avoided	Farmer et al. 2009

Resource	Description	When Found	Period/ Era	Location	Info Source
CA-Riv-9248H (P33-18002)	Refuse Scatter: 8 .30 caliber machine gun cartridges (stamped base 1938 and 1940), 12 gauge shotgun shell brass, 1 coffee can "Nescafe" (c. 1940s-1960s), 13 cans, automobile leaf spring,, razor blade, metal fragments (1940s military?)	GSEP Class III	Historic	Linear Corridor	Farmer et al. 2009
CA-Riv-9251H (P33-18005)	Refuse Scatter: 2 .30 caliber machine gun cartridges (stamped base 1940),1 threaded lid coffee can, 2 C-ration cans, 1 pocket knife, 3 cans, bailing wire (1940s military?)	GSEP Class III	Historic	Linear Corridor	Farmer et al. 2009
CA-Riv-9252H (P33-18006)	Refuse Scatter: 1 amber glass beer bottle (Anchor Hocking post 1937), 4 C-ration cans, 7 sanitary cans (1940s military?)	GSEP Class III	Historic	Avoided	Farmer et al. 2009
CA-Riv-9253H (P33-18007)	Refuse Scatter: 1 C-ration can, 6 sanitary cans, 1 large beverage can, glass fragment (1940s military?)	GSEP Class III	Historic	Avoided	Farmer et al. 2009
CA-Riv-9254H (P33-18008)	Refuse Scatter: cans (N=12)	GSEP Class III	Historic	Linear Corridor	Farmer et al. 2009
CA-Riv-9258H (P33-18012)	Refuse Scatter: 61 C-ration cans, 7 soluble coffee cans, 72 cans, 1 .30 caliber machine gun cartridge (stamped base 1940), glass bottle fragments (Owens Illinois c. 1929-1957), 7 coffee cans external thread lid (1940s military?)	GSEP Class III	Historic	Linear Corridor	Farmer et al. 2009
CA-Riv-9259H (P33-18013)	Historic Feature: Stake Alignments: (n=2) (1940s military?)	GSEP Class III	Historic	Linear Corridor	Farmer et al. 2009
CA-Riv-9261H (P33-18015)	Refuse Scatter: 6 C-ration cans, 1 soluble coffee can, 1 tobacco tin (1940s military?)	GSEP Class III	Historic	Avoided	Farmer et al. 2009
CA-Riv-9262H (P33-18016)	Refuse Scatter: 80 C-ration cans, 4 soluble coffee cans, 1 military mess fork stamped "US", 1 tobacco tin (1940s military?)	GSEP Class III	Historic	Avoided	Farmer et al. 2009
CA-Riv-9263H (P33-18017)	Refuse Scatter:17 C-ration cans, 1 cone-top can, 6 tobacco tins, 1 boot sole, 1 gas tank cap, 1 clear glass bottle (Owens Illinois c. 1929-1959), 1 large bolt, 1 D-size battery (1940s military?)	GSEP Class III	Historic	Avoided	Farmer et al. 2009

Resource	Description	When Found	Period/ Era	Location	Info Source
Dual-Component					
P33-01516	Temporary Camp/Refuse Scatter: (n=1000+) along dry lake shoreline, ground stone, lithic scatter, thermal fractured rock. WW II military artifacts.	Previously known	Prehistoric /Historic	In Ethno-graphic PAA	Ritter 1975
CA-Riv-9205H (P33-17774)	Artifact Scatter/ Refuse Scatter: Debitage (n=4); mano, 2 metate fragments. Glass bottles (post 1945), auto parts (1930-1940), condensed milk cans.	GSEP Class II	Prehistoric /Historic	In Facility Footprint	Farmer et al. 2009
CA-Riv-9058H (P33-17442)	Artifact Scatter/Refuse Scatter: near lake shore, (n=33) prehistoric artifacts, lithics, 11 ground stone, 4 buffware sherds. Historic-period cans and bottles (n=3+).	GSEP Class II	Prehistoric /Historic	Avoided	Farmer et al. 2009
CA-Riv-9082H (P33-17466)	Lithic Scatter/Refuse Scatter: Debitage (n=3). Cans (n=6)	GSEP Class II	Prehistoric /Historic	Avoided	Farmer et al. 2009
CA-Riv-9224 (P33-17793)	Temporary Camp/Refuse Scatter: Prehistoric (n=60+), 2 concentrations, FAR in 2 possible hearths, brownware pot drop (n=28+), 1 Desert Side-notched projectile point (AD 1100 to Contact), historic-period (n=6) .45 caliber bullets, mess-kit spoon stamped “US”, C-ration coffee can, pocket knife. Possibly part of CA-Riv-260.	GSEP Class III	Prehistoric /Historic	In Ethno-graphic PAA	Farmer et al. 2009
CA-Riv-9247 (P33-18001)	Ceramic Scatter/Refuse Scatter: Brownware sherds (n=3), 4 C-ration cans, 13 sanitary cans, 1 nut and bolt, 1 clear glass jar – Armstrong Cork Company (c.1938 -1969)	GSEP Class III	Prehistoric /Historic	Avoided	Farmer et al. 2009
Built Environ-ment					
No number	Blythe-Eagle Mountain Transmission Line	GSEP Class III	Historic	Linear Corridor	Farmer et al. 2009, app. F
No number	Wiley’s Well Road	GSEP Class III	Historic	Linear Corridor	Farmer et al. 2009, app. F
Unknown					
P33-00144	No details on site record. Note: F.R. Johnson on map in Walker’s possession.	Previously known	Unknown	Vicinity	Eberhart 1951

Resource	Description	When Found	Period/ Era	Location	Info Source
CA-Riv-0259 (P33-00259) or (P33-13656)	Prehistoric Rock Rings or WWII era foxholes with refuse scatter?	Previously known	Unknown	Linear Corridor	Gester 1965 Mooney & Associates 2004

Two-hundred and twenty-four of the sites identified by McCarthy (1993), which staff considers to be within the ethnographic APE, were not identified by Tetra Tech and so are not included in Table 7, above. These important sites are listed in **Cultural Resources Table 8**. Information regarding these sites was collected by Energy Commission staff from McCarthy's (1993) report but not the individual site forms.

CULTURAL RESOURCES Table 8
Cultural Resources Located by McCarthy in the Vicinity of GSEP

Resource	Description
CA-Riv-0071	Ceramic Scatter: 33 ceramics along Halchidhoma Trail, CA-Riv-0053T, diagnostic ceramics and lithics collected.
CA-Riv-0132	Temporary Camp: Diagnostic ceramics, slate pendant and obsidian collected.
CA-Riv-0258	Trail
CA-Riv-0503	Petroglyphs: 48 images, heavily patinated possibly old. Near Destination Area C.
CA-Riv-0523	Petroglyphs: 13 images, Destination Area B, water tank, Trails 4680, 4685, 4686 lead here. Near smaller water tank 4699.
CA-Riv-0661	Geoglyph: horseshoe shaped, 20m N/S by 39m E/W, south of Halchidhoma Trail CA-Riv-0053T, south end of McCoy Mountains, near transmission line corridor.
CA-Riv-0662	Geoglyph: 2 half circles, 40 m N/s by 60 m E/W, south of Halchidhoma Trail CA-Riv-0053T, south end of McCoy Mountains, near transmission line corridor. Partially disturbed.
CA-Riv-0792	Petroglyphs: Near Destination Area D. Unknown number of petroglyphs. Couldn't relocate. Near the Halchidhoma Trail CA-Riv-0053T and trails 4704, and 4705.
CA-Riv-0896	Trail
CA-Riv-0980	Activity Area: 2 trails, petroglyphs, inscription "Watter in left hand gulch about 200 yds J B 1873." Alternate name "Palen Tank"?
CA-Riv-1127	Ceramic Scatter: 30 ceramics, along unknown trail.
CA-Riv-1128	Artifact Scatter: lithics, 3 metates, 21 ceramics, along Halchidhoma Trail CA-Riv-0053T.
CA-Riv-1129	Ceramic Scatter: 200 ceramics, along Halchidhoma Trail CA-Riv-0053T. Diagnostic ceramics collected.
CA-Riv-1130	Ceramic Scatter: 6 ceramics, along unknown trail.
CA-Riv-3095	Artifact Scatter: 9 metates, 5 ceramics, along unknown trail.
CA-Riv-3110	Trail: 2.6 km long segment, leads directly to McCoy Spring. Sites 3115, 3116, 4601 along it. Within 3km of McCoy Spring.
CA-Riv-3111	Trail: 3.4 km long segment, leads directly to McCoy Spring, sites 3118, 3119, 3120, 3122 along it. Within 3km of McCoy Spring.
CA-Riv-3112	Trail: 2.5 km long segment, leads directly to McCoy Spring, sites 3117, 3121, 4604 along it. Within 3km of McCoy Spring.
CA-Riv-3113	Trail: leads directly to McCoy Spring. Sites 3123, 3124, 3125, 3126, 3127, 3921, 3922, 3825, 4609 along it.
CA-Riv-3114	Trail: 4.2 km long segment, leads directly to McCoy Spring. Sites 3923 and 3924, along it. Within 3km of McCoy Spring.
CA-Riv-3115	Petroglyph: 1 image, along trail 3110 leading directly to McCoy Spring. Within 3km of McCoy Spring.
CA-Riv-3116	Petroglyph: 1 image, along trail 3110 leading directly to McCoy Spring. Within 3km of McCoy Spring.

Resource	Description
CA-Riv-3117	Temporary Camp: lithics, 4 metates, 3 petroglyphs, 5 rock cairns, 14 cleared circles, along trail 3112 leading directly to McCoy Spring. Other sites on same trail are 3121 and 4604. Within 3km of McCoy Spring.
CA-Riv-3118	Isolate:1 metate, along trail 3111 leading directly to McCoy Spring. Other sites along same trail are 3119, 3120, 3122. Within 3km of McCoy Spring.
CA-Riv-3119	Activity Area: 1 petroglyph, along trail 3111. Other sites along same trail are 3118, 3120, 3122. Within 3km of McCoy Spring.
CA-Riv-3120	Petroglyph:1 image, along trail 3111 leading directly to McCoy Spring. Other sites along same trail are 3118, 3119, 3122. Within 3km of McCoy Spring.
CA-Riv-3121	Ceramic Scatter: 25 ceramics, along trail 3112 leading directly to McCoy Spring. Other sites on same trail are 3117 and 4604. Within 3km of McCoy Spring.
CA-Riv-3122	Ceramic Scatter: 140 ceramics, along trail 3111 leading directly to McCoy Spring. Other sites along same trail are 3118, 3119, 3120. Within 3km of McCoy Spring.
CA-Riv-3123	Ceramic Scatter: 4 ceramics, along trail 3113 leading directly to McCoy Spring. Other sites along this trail are 3124, 3125, 3126, 3127, 3921, 3922, 3925, 4609. Within 3km of McCoy Spring.
CA-Riv-3124	Ceramic Scatter: 9 ceramics, along trail 3113 leading directly to McCoy Spring. Other sites along this trail are 3123, 3125, 3126, 3127, 3921, 3922, 3925, 4609. Within 3km of McCoy Spring.
CA-Riv-3125	Rock Cluster: 1 cluster, along trail 3113 leading directly to McCoy Spring. Other sites along this trail are 3123, 3124, 3126, 3127, 3921, 3922, 3925, 4609. Within 3km of McCoy Spring.
CA-Riv-3126	Isolate: 2 metates, along trail 3113 leading directly to McCoy Spring. Other sites along this trail are 3123, 3124, 3125, 3127, 3921, 3922, 3925, 4609. Within 3km of McCoy Spring.
CA-Riv-3127	Ceramic Scatter: 36 ceramics, along trail 3113 leading directly to McCoy Spring. Other sites along this trail are 3123, 3124, 3125, 3126, 3921, 3922, 3925, 4609. Within 3km of McCoy Spring.
CA-Riv-3128	Activity Area: 7 metates, 12 cleared circles, along unknown trail. Within 3km of McCoy Spring.
CA-Riv-3129	Trail: West of Halchidhoma Trail CA-Riv-0053T, intersects with trails 3130 and 4688. Near Destination Area B.
CA-Riv-3130	Trail: Intersects with Halchidhoma Trail CA-Riv-0053T from the west. Also with 3129 and 4691. Near Destination Area B.
CA-Riv-3145	Petroglyphs: 3 petroglyph images.
CA-Riv-3146	Petroglyphs: 8 petroglyph images.
CA-Riv-3147	Petroglyphs: 8 petroglyph images, unusual rectilinear or mazelike image.
CA-Riv-3148	Petroglyphs: 5 petroglyph images.
CA-Riv-3149	Activity Area: 1 metate, 2 petroglyph images. Tank, water source, west side of McCoy Mountains.
CA-Riv-3803	Trail: Parallels Halchidhoma Trail CA-Riv-0053T, to the south. On south end of McCoy Mountains near transmission line corridor.
CA-Riv-3890	Ceramic Scatter: 5 ceramics, along Halchidhoma Trail CA-Riv-0053T. Within 3km of McCoy Spring.
CA-Riv-3891	Isolate: 1 metate, along Halchidhoma Trail CA-Riv-0053T. Within 3km of McCoy Spring.
CA-Riv-3892	Isolate: 1 metate, along Halchidhoma Trail CA-Riv-0053T. Within 3km of McCoy Spring.
CA-Riv-3893	Isolate: 2 metates, along Halchidhoma Trail CA-Riv-0053T. Within 3km of McCoy Spring.
CA-Riv-3894	Isolate: 1 metate, along Halchidhoma Trail CA-Riv-0053T. Within 3km of McCoy Spring.
CA-Riv-3895	Isolate: 1 metate, along Halchidhoma Trail CA-Riv-0053T. Within 3km of McCoy Spring.
CA-Riv-3896	Isolate:1 metate, along Halchidhoma Trail CA-Riv-0053T. Within 3km of McCoy Spring.
CA-Riv-3897	Petroglyph: 1 image, along Halchidhoma Trail CA-Riv-0053T. Within 3km of McCoy Spring.
CA-Riv-3898	Activity Area: 1 metate, 4 petroglyphs, 1 rock cluster, 12 ceramics, along Halchidhoma Trail CA-Riv-0053T. Within 3km of McCoy Spring.
CA-Riv-3899	Isolate:1 metate, along Halchidhoma Trail CA-Riv-0053T. Within 3km of McCoy Spring.
CA-Riv-3900	Isolate:1 metate, along Halchidhoma Trail CA-Riv-0053T. Within 3km of McCoy Spring.

Resource	Description
CA-Riv-3901	Activity Area: 1 petroglyph, 20 ceramics, along Halchidhoma Trail CA-Riv-0053T. Within 3km of McCoy Spring.
CA-Riv-3902	Activity Area: 1 metate, 1 petroglyph, along Halchidhoma Trail CA-Riv-0053T. Within 3km of McCoy Spring.
CA-Riv-3903	Activity Area: 2 metates, 5 petroglyphs, 2 rock clusters, along Halchidhoma Trail CA-Riv-0053T. Within 3km of McCoy Spring.
CA-Riv-3904	Activity Area: 7 metates, 2 petroglyphs, along Halchidhoma Trail CA-Riv-0053T. Within 3km of McCoy Spring.
CA-Riv-3905	Artifact Scatter: 1 metate, 2 ceramics, along Halchidhoma Trail CA-Riv-0053T. Within 3km of McCoy Spring.
CA-Riv-3906	Temporary Camp: 8 metates, 41 petroglyph images including one rare mountain sheep, 6 ceramics. At intersection of trails 53 and 4572, near Destination Area A.
CA-Riv-3907	Isolate: 1 metate, along unknown trail.
CA-Riv-3908	Isolate: 1 metate, along unknown trail.
CA-Riv-3909	Isolate: 2 metates, along unknown trail.
CA-Riv-3910	Isolate: 1 metate, along unknown trail.
CA-Riv-3911	Isolate: 1 ceramic, along unknown trail.
CA-Riv-3912	Rock Cluster: 1 cluster, along unknown trail.
CA-Riv-3913	Ceramic Scatter: 3 ceramics, along unknown trail.
CA-Riv-3914	Ceramic Scatter: 64 ceramics, along unknown trail.
CA-Riv-3915	Artifact Scatter: 1 metate, 38 ceramics, along unknown trail.
CA-Riv-3916	Artifact Scatter: 1 metate, 15 ceramics, along unknown trail.
CA-Riv-3917	Activity Area: 6 rock rings. Near intersection of trails 4686 Halchidhoma Trail CA-Riv-0053T.
CA-Riv-3918	Artifact Scatter: 3 metates, 90 ceramics, along unknown trail.
CA-Riv-3919	Artifact Scatter: 1 metate, 10 ceramics, along unknown trail.
CA-Riv-3920	Ceramic Scatter: 60 ceramics, along unknown trail.
CA-Riv-3921	Ceramic Scatter: 3 ceramics, along trail 3113 leading directly to McCoy Spring. Other sites along this trail are 3123, 3124, 3125, 3126, 3127, 3922, 3925, 4609. Within 3km of McCoy Spring.
CA-Riv-3922	Ceramic Scatter: 13 ceramics, along trail 3113 leading directly to McCoy Spring. Other sites along this trail are 3123, 3124, 3125, 3126, 3127, 3921, 3925, 4609. Within 3km of McCoy Spring.
CA-Riv-3923	Isolate: 1 metate, along trail 3114 leading directly to McCoy Spring. Site 3924 also along this trail. Within 3km of McCoy Spring.
CA-Riv-3924	Artifact Scatter: lithics, 14 ceramics, along trail 3114 leading directly to McCoy Spring. Site 3923 also along this trail. Within 3km of McCoy Spring.
CA-Riv-3925	Ceramic Scatter: 23 ceramics, along trail 3113 leading directly to McCoy Spring. Other sites along this trail are 3123, 3124, 3125, 3126, 3127, 3921, 3922, 4609. Within 3km of McCoy Spring.
CA-Riv-3926	Ceramic Scatter: 75 ceramics, along unknown trail.
CA-Riv-3927	Military Camp and Refuse Scatter: WW II era, 120 cleared areas on desert pavement, cans, tent equipment, and bottles, DTC contributor.
CA-Riv-4501	Artifact Scatter: 3 metates, 5 ceramics, along unknown trail.
CA-Riv-4502	Artifact Scatter: lithics, 1 metate
CA-Riv-4503	Ceramic Scatter: 9 ceramics. along Halchidhoma Trail CA-Riv-0053T.
CA-Riv-4504	Ceramic Scatter: 66 ceramics, along Halchidhoma Trail CA-Riv-0053T.
CA-Riv-4505	Ceramic Scatter: 53 ceramics, along Halchidhoma Trail CA-Riv-0053T.
CA-Riv-4506	Artifact Scatter: 3 metates, 13 ceramics, along Halchidhoma Trail CA-Riv-0053T, Diagnostic ceramics collected.
CA-Riv-4507	Artifact Scatter: 1 metate, 13 ceramics, along Halchidhoma Trail CA-Riv-0053T,
CA-Riv-4508	Ceramic Scatter: 150 ceramics, along Halchidhoma Trail CA-Riv-0053T. Diagnostic ceramics collected.
CA-Riv-4509	Ceramic Scatter: 90 ceramics, along Halchidhoma Trail CA-Riv-0053T. Diagnostic ceramics collected.

Resource	Description
CA-Riv-4510	Artifact Scatter: 1 metate, 100 ceramics, along Halchidhoma Trail CA-Riv-0053T. Diagnostic ceramics collected.
CA-Riv-4511	Ceramic Scatter: 77 ceramics, along Halchidhoma Trail CA-Riv-0053T. Diagnostic ceramics and lithics collected.
CA-Riv-4512	Artifact Scatter: 2 metates, 47 ceramics, along Halchidhoma Trail CA-Riv-0053T. Diagnostic ceramics collected.
CA-Riv-4513	Ceramic Scatter: 100 ceramics, along Halchidhoma Trail CA-Riv-0053T.
CA-Riv-4514	Ceramic Scatter: 60 ceramics, along Halchidhoma Trail CA-Riv-0053T. Diagnostic ceramics collected.
CA-Riv-4515	Artifact Scatter: 1 metate, 65 ceramics, along Halchidhoma Trail CA-Riv-0053T Diagnostic ceramics collected.
CA-Riv-4516	Artifact Scatter: 1 metate, 41 ceramics, along Halchidhoma Trail CA-Riv-0053T.
CA-Riv-4517	Artifact Scatter: lithics, 50 ceramics, along Halchidhoma Trail CA-Riv-0053T. Diagnostic ceramics collected.
CA-Riv-4518	Trail: Short segment branching north off of Halchidhoma Trail CA-Riv-0053T in the direction of Destination Area C.
CA-Riv-4519	Trail: Leads to Destination Area C, water tank, 49 ceramics. Diagnostic ceramics collected. Also associated with trail 4703.
CA-Riv-4520	Artifact Scatter: lithics, 21 ceramics, along Halchidhoma Trail CA-Riv-0053T.
CA-Riv-4521	Artifact Scatter: 1 metate, 60 ceramics along Halchidhoma Trail CA-Riv-0053T.
CA-Riv-4522	Ceramic Scatter: 35 ceramics, along Halchidhoma Trail CA-Riv-0053T.
CA-Riv-4523	Artifact Scatter: 2 metates, 1 ceramic, along unknown trail.
CA-Riv-4524	Activity Area: 2 metates, 3 petroglyph images, 90 ceramics, along unknown trail.
CA-Riv-4525	Artifact Scatter: 3 metates, 80 ceramics, along unknown trail.
CA-Riv-4526	Ceramic Scatter: 26 ceramics, along unknown trail.
CA-Riv-4527	Artifact Scatter: lithics, 74 ceramics, along unknown trail.
CA-Riv-4528	Artifact Scatter: lithics, 65 ceramics, along unknown trail.
CA-Riv-4529	Isolate: 1 metate, along unknown trail.
CA-Riv-4530	Ceramic Scatter: 32 ceramics, along unknown trail.
CA-Riv-4531	Ceramic Scatter: 10 ceramics, along unknown trail.
CA-Riv-4532	Artifact Scatter: lithics, 3 ceramics, along unknown trail.
CA-Riv-4533	Artifact Scatter: lithics, 29 ceramics, along unknown trail.
CA-Riv-4534	Artifact Scatter: 1 metate, 55 ceramics, along unknown trail.
CA-Riv-4535	Artifact Scatter: lithics, 49 ceramics, along unknown trail.
CA-Riv-4536	Isolate: 1 metate, along unknown trail.
CA-Riv-4537	Ceramic Scatter: 34 ceramics, along unknown trail.
CA-Riv-4538	Isolate: 2 ceramics, along unknown trail.
CA-Riv-4539	Ceramic Scatter: 12 ceramics, along unknown trail.
CA-Riv-4540	Ceramic Scatter: 147 ceramics, along unknown trail.
CA-Riv-4541	Ceramic Scatter: 5 ceramics, along unknown trail.
CA-Riv-4542	Ceramic Scatter: 7 ceramics, along unknown trail.
CA-Riv-4543	Ceramic Scatter: 5 ceramics, along unknown trail.
CA-Riv-4544	Ceramic Scatter: 58 ceramics, along unknown trail.
CA-Riv-4545	Ceramic Scatter: 21 ceramics, along unknown trail.
CA-Riv-4546	Isolate: 1 metate, along unknown trail.
CA-Riv-4547	Artifact Scatter: lithics, 1 metate, 2 ceramics, along unknown trail.
CA-Riv-4548	Artifact Scatter: 4 metates, 47 ceramics, along unknown trail.
CA-Riv-4549	Ceramic Scatter: 21 ceramics. Diagnostic ceramics collected, along unknown trail.
CA-Riv-4550	Ceramic Scatter: 37 ceramics, along unknown trail.
CA-Riv-4551	Ceramic Scatter: 11 ceramics, along unknown trail.
CA-Riv-4552	Ceramic Scatter: 3 ceramics, along unknown trail.
CA-Riv-4553	Ceramic Scatter: 21 ceramics, along unknown trail.
CA-Riv-4554	Ceramic Scatter: 31 ceramics, along unknown trail.
CA-Riv-4555	Ceramic Scatter: 3 ceramics, along unknown trail.
CA-Riv-4556	Ceramic Scatter: 7 ceramics, along unknown trail.

Resource	Description
CA-Riv-4557	Ceramic Scatter: 3 ceramics, along unknown trail.
CA-Riv-4558	Ceramic Scatter: 11 ceramics, along unknown trail.
CA-Riv-4559	Ceramic Scatter: 69 ceramics, along unknown trail.
CA-Riv-4560	Ceramic Scatter: 14 ceramics, along unknown trail.
CA-Riv-4561	Ceramic Scatter: 3 ceramics, along unknown trail.
CA-Riv-4562	Ceramic Scatter: 61 ceramics, along unknown trail.
CA-Riv-4563	Ceramic Scatter: 4 ceramics, along unknown trail.
CA-Riv-4564	Ceramic Scatter: 11 ceramics, along unknown trail.
CA-Riv-4565	Ceramic Scatter: 60 ceramics, along unknown trail.
CA-Riv-4566	Ceramic Scatter: 23 ceramics, along unknown trail.
CA-Riv-4568	Trail: Short trail segment on the south end of McCoy Mountains, just southwest of geoglyph 661, and south of trails 3803 and the Halchidhoma Trail CA-Riv-0053T. Portions possibly disturbed by transmission line.
CA-Riv-4569	Temporary Camp: Destination Area A, water tank, west side of McCoy Mountains, trail segment, lithics, 2 metates, 7 petroglyph images, 1 cleared circle. Near other Area A site 3906. Trails 53, 4570, 4571, and 4572 lead to Area A.
CA-Riv-4570	Trail: leads to Destination Area A, temporary camp 4569, with trails 53, 4571, 4572.
CA-Riv-4571	Trail: leads to Destination Area A, temporary camp 4569, with trails 53, 4570, 4572.
CA-Riv-4572	Trail: leads to Destination Area A, temporary camp 4569, with trails 53, 4570, 4571. Adjacent to 4573.
CA-Riv-4573	Rock Ring: 1 ring, adjacent to trail 4572.
CA-Riv-4574	Cairn: 5 rock cairns, along unknown trail.
CA-Riv-4575	Cleared Circle: 1 circle, along unknown trail. Within 3km of McCoy Spring.
CA-Riv-4576	Cleared Circle: 1 circle, along unknown trail. Within 3km of McCoy Spring.
CA-Riv-4577	Activity Area: spring/seep, water tank, rock shelter, 40 petroglyphs, 7 metates, 5 ceramics. Within 3km of McCoy Spring.
CA-Riv-4578	Petroglyphs: 5 images. Within 3km of McCoy Spring.
CA-Riv-4579	Petroglyphs: 2 images. Within 3km of McCoy Spring.
CA-Riv-4580	Activity Area: 4 cleared circles, 5 metates. Within 3km of McCoy Spring.
CA-Riv-4581	Trail: 2.7 km segment, leading directly to McCoy Spring. Associated with sites 4583, 4584, 4585, 4599, 4600. Within 3km of McCoy Spring.
CA-Riv-4582	Trail: 1.7 km segment leading directly to McCoy Spring. Within 3km of McCoy Spring.
CA-Riv-4583	Ceramic Scatter: 9 ceramics, along trail 4581 leading directly to McCoy Spring. Associated with sites 4584, 4585, 4599, 4600. Within 3km of McCoy Spring.
CA-Riv-4584	Ceramic Scatter: 9 ceramics, along trail 4581 leading directly to McCoy Spring. Associated with sites 4583, 4585, 4599, 4600. Within 3km of McCoy Spring.
CA-Riv-4585	Ceramic Scatter: 4 ceramics, along trail 4581 leading directly to McCoy Spring. Associated with sites 4583, 4584, 4599, 4600. Within 3km of McCoy Spring.
CA-Riv-4586	Rock Ring: 1 ring. Within 3km of McCoy Spring.
CA-Riv-4587	Trail: 1.1 km segment leading directly to McCoy Spring. Within 3km of McCoy Spring.
CA-Riv-4588	Ceramic Scatter: 6 ceramics, along trail 4592 leading directly to McCoy Spring. Site 4593 also on trail. Within 3km of McCoy Spring.
CA-Riv-4589	Unknown: associated with trail 4612 leading to Quartz Hill Tank. Sites recorded along the trail 4606, 4608, 4610, and 4615. Within 3km of McCoy Spring.
CA-Riv-4590	Trail: leading to Quartz Hill Tank. Associated with sites 4601, 4606, 4607. Within 3km of McCoy Spring.
CA-Riv-4591	Trail: 2.0 km segment, leading directly to McCoy Spring. Intersects with 4596. Within 3km of McCoy Spring.
CA-Riv-4592	Trail: 3.1 km segment, leading directly to McCoy Spring. Sites 4588 and 4593 are along it. Within 3km of McCoy Spring.
CA-Riv-4593	Ceramic Scatter: unknown number at south end of trail 4593, which leads directly to McCoy Spring. Within 3km of McCoy Spring.
CA-Riv-4594	Trail: 1.2 km segment, trail leading directly to McCoy Spring. Associated with site 4595. Within 3km of McCoy Spring.
CA-Riv-4595	Ceramic Scatter: 9 ceramics, at south end of trail 4594 leading directly to McCoy Spring. Within 3km of McCoy Spring.

Resource	Description
CA-Riv-4596	Trail: 2.0 km segment, leading directly to McCoy Spring. Intersects with trail 4591. Associated with sites 4615 and 4616. Within 3km of McCoy Spring.
CA-Riv-4597	Activity Area: lithics, 5 metates, 4 petroglyphs, 1 rock ring. Within 3km of McCoy Spring.
CA-Riv-4598	Activity Area: lithics, 7 metates, 29 petroglyphs. Within 3km of McCoy Spring.
CA-Riv-4599	Activity Area: 6 metates, 34 petroglyphs, 1 ceramic, along trail 4581 leading directly to McCoy Spring. Associated with sites 4583, 4584, 4585, 4599, 4600. Within 3km of McCoy Spring.
CA-Riv-4600	Activity Area: 3 metates, 20 petroglyphs, along trail 4581 leading directly to McCoy Spring. Associated with sites 4583, 4584, 4585, 4599, 4600. Within 3km of McCoy Spring.
CA-Riv-4601	Temporary Camp: along trail 3110 leading directly to McCoy Spring. 16 metates, 17 petroglyphs, 1 rock ring, 1 cleared circle. Also along trail 4611, and 4590, leading to Quartz Hill Tank. Within 3km of McCoy Spring.
CA-Riv-4602	Activity Area: metate, 9 petroglyphs, along trail leading directly to McCoy Spring. Sites 4601, 4603, and 4604 also recorded along it. Within 3km of McCoy Spring.
CA-Riv-4603	Activity Area: 3 metates, 1 petroglyph, along trail 4611 leading directly to McCoy Spring. Sites 4601, 4602, and 4604 recorded along it. Within 3km of McCoy Spring.
CA-Riv-4604	Petroglyphs: 27 petroglyphs, along trail 3112 leading directly to McCoy Spring. Also along trail 4611. Within 3km of McCoy Spring.
CA-Riv-4605	Activity Area: 1 metate, 3 rock rings. Within 3km of McCoy Spring.
CA-Riv-4606	Activity Area: 1 rock ring, 12 cleared circles, along trails 4590 and 4612 leading to Quartz Hill Tank. Within 3km of McCoy Spring.
CA-Riv-4607	Activity Area: lithics, 3 metates, 1 petroglyph, along trail 4590 leading to Quartz Hill Tank. Associated with sites 4601, 4606. Within 3km of McCoy Spring.
CA-Riv-4608	Artifact Scatter: 9 metates, along trail 4612 leading to Quartz Hill Tank. Sites recorded along the trail 4589, 4606, 4610, and 4615.Within 3km of McCoy Spring.
CA-Riv-4609	Activity Area: 1 rock cairn, 2 ceramics, along trail 3113 leading directly to McCoy Spring. Other sites along this trail are 3123, 3124, 3125, 3126, 3127, 3921, 3922, 3925. Within 3km of McCoy Spring.
CA-Riv-4610	Activity Area: 8 metates, 2 petroglyphs, 20 ceramics, along trail 4612 leading to Quartz Hill Tank and trail 4614 leading to McCoy Spring. Within 3km of McCoy Spring.
CA-Riv-4611	Trail: 0.2 km long segment, leading directly to McCoy Spring. Sites 4601, 4602, 4603, 4604 recorded along it. Within 3km of McCoy Spring.
CA-Riv-4612	Trail: 0.2 km long segment, leading to Quartz Hill Tank. Sites recorded along the trail 4589, 4606, 4608, 4610, and 4615. Within 3km of McCoy Spring.
CA-Riv-4613	Trail: 0.1 km long segment leading directly to McCoy Spring. Site 4616 recorded along it. Within 3km of McCoy Spring.
CA-Riv-4614	Trail: 0.3 km long segment leading directly to McCoy Spring. Site 4610 recorded along it. Within 3km of McCoy Spring.
CA-Riv-4615	Artifact Scatter: 2 metates, 12 ceramics, along trail 4596 leading directly to McCoy Spring and trail 4612 leading to Quartz Hill Tank. Within 3km of McCoy Spring.
CA-Riv-4616	Activity Area: 1 metate, 1 petroglyph, along trails 4596 and 4613 leading directly to McCoy Spring. Within 3km of McCoy Spring.
CA-Riv-4617	Artifact Scatter: 7 metates. Within 3km of McCoy Spring.
CA-Riv-4618	Ceramic Scatter: 18 ceramics, along unknown trail. Within 3km of McCoy Spring.
CA-Riv-4680	Trail: leads to Destination Area B including water sources at 523 and 4699. Other trails leading to B are 4685, 4686.
CA-Riv-4681	Ceramic Scatter: 130 ceramics, along unknown trail.
CA-Riv-4682	Ceramic Scatter: 21 ceramics, along unknown trail.
CA-Riv-4683	Ceramic Scatter: 60 ceramics, along unknown trail.
CA-Riv-4684	Trail: small branch trail off 4680, near Destination Area B.
CA-Riv-4685	Trail: leads to Destination Area B including water sources at 523 and 4699. Other trails leading to B are 4680, 4686.
CA-Riv-4686	Trail leads to Destination Area B including water sources at 523 and 4699. Other trails leading to B are 4680, 4685.
CA-Riv-4687	Rock Ring: 1 ring, along unknown trail.
CA-Riv-4688	Trail: near Destination Area B. Intersects with trails 3129. Just south of 3130.

Resource	Description
CA-Riv-4689	Rock Cluster: 2 clusters, along unknown trail.
CA-Riv-4690	Ceramic Scatter: 32 ceramics, along unknown trail.
CA-Riv-4691	Trail: Very short, short-cut trail connecting trail 3130 with the Halchidhoma Trail, CA-Riv-0053T.
CA-Riv-4692	Ceramic Scatter: 7 ceramics, along unknown trail.
CA-Riv-4693	Ceramic Scatter: 35 ceramics, along unknown trail.
CA-Riv-4694	Activity Area: 2 petroglyph images, 1 rock cluster, along unknown trail.
CA-Riv-4695	Temporary Camp: trail segment, 2 metates, 120 petroglyph images, 1 rock ring.
CA-Riv-4696	Isolate: 1 metate, along unknown trail.
CA-Riv-4697	Trail: near Destination Area B.
CA-Riv-4698	Trail: near Destination Area B.
CA-Riv-4699	Activity Area: Destination Area B, water tank, western side of McCoy Mountains, trail segment, 2 metates, 19 petroglyph images, 150 ceramics. Near other Area B sites, 523 and 4700.
CA-Riv-4700	Activity Area: Destination Area B, trail segment, 7 petroglyph images. Near other Area B sites 523 and 4699.
CA-Riv-4701	Trail: Small trail segment east of but paralleling the Halchidhoma Trail, CA-Riv-0053T, at the south end of McCoy Mountains.
CA-Riv-4702	Trail: Small trail segment branching north off the Halchidhoma Trail CA-Riv-0053T at the south end of McCoy Mountains.
CA-Riv-4703	Trail: leads to Destination Area C, water tank. Associated with trail 4519.
CA-Riv-4704	Trail: leads to Destination Area D, water tanks. Associated with the Halchidhoma Trail CA-Riv-0053T and trail 4705.
CA-Riv-4705	Trail: leads to Destination Area D, water tanks. Associated with the Halchidhoma Trail CA-Riv-0053T and trail 4704.
CA-Riv-4706	Isolate: 1 metate, along unknown trail.

Results of Geoarchaeological Investigations

The consultant for the applicant provided two geomorphological reports that summarize the geomorphology of the GSEP site footprint and linear facilities corridor on the basis of the extant geologic and soil science data for the region (Farmer et al. 2009, app. C) as well as field explorations (TTEC 2010e). As discussed in the "Geomorphology" subsection, above, six sedimentary units were identified during these investigations. The preliminary assessment for archaeological sensitivity of each of these units is presented below.

1. The Qw active stream wash deposits have a moderate potential for containing buried archaeological artifacts. However, the moderate-to-high-energy movement of water through these sediments would not be conducive to the preservation of archaeological materials and the spatial associations among them.

2. The Qs late Holocene-age, wind-deposited sand sheets are most commonly found to the south of the proposed GSEP site footprint often overlaying lake deposits (Ql). Staff considers this stratigraphic unit to have a moderate-to-high potential for containing buried archaeological deposits associated with human utilization of resources associated with Ford Dry Lake. Relatively low-energy alluvial and aeolian movement of sediments would be conducive to the preservation of archaeological materials and the spatial associations among them. Poorer preservation of these spatial associations is expected in sites located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash.

3. The Qal alluvium was deposited across most of the GSEP site footprint between 1,000 and 8,000 years ago, well within the human occupation of the region. This approximately 1-foot-thick layer was laid down by low-to-moderate-energy sheet wash and flood events. It is often covered by sand sheets 4 to 8 inches thick (Qsr). Staff considers this stratigraphic unit to have a moderate –to-high potential for containing buried deposits. The potential for buried deposits is expected to increase with proximity to the lake. Deposits formed by low- and moderate-energy sheet wash would be conducive to the preservation of archaeological materials and the spatial associations among them. Poorer preservation of these spatial associations is expected in sites located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash.

4. The ancient Qsr sand sheets were deposited between 1,000 to 7,000 years ago, within the human occupation of the region. This stratigraphic unit is common on the surface of the site footprint overlaying unit Qal in a layer 4 to 8 inches thick. Staff considers this stratigraphic unit to have a moderate-to-high potential for containing buried deposits. The potential for buried deposits is expected to increase with proximity to the lake. Relatively low-energy alluvial and aeolian movement of sediments would be conducive to the preservation of archaeological materials and the spatial associations among them. Poorer preservation of these spatial associations is expected in sites located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash.

5. The distinctly red Qoaf Pleistocene alluvial fan deposits were created between 12,000 and 20,000 years ago. They are present within 1 to 2 feet of the modern ground surface across most of the proposed GSEP site footprint. Staff considers this stratigraphic unit to have a low to moderate potential for archaeological materials on its upper surface. Because these deposits were formed prior to the human occupation of the region, the potential for containing buried cultural materials is considered low. The low-to-moderate-energy sheet wash and flood events on the surface of this stratigraphic unit would be moderately conducive to the preservation of archaeological materials and the spatial associations among them. Poorer preservation of these spatial associations is expected in sites located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash.

6. The Ql stratigraphic unit can be divided into two distinct groups, those deposited above the Qoaf alluvium and those deposited below the Qoaf alluvium. The lake deposits below the Qoaf alluvium were formed more than 12,000 years ago, prior to the human occupation of the area. As a result staff does not expect these lake sediments to contain cultural materials. Lake deposits above the Qoaf alluvium were formed during the human occupation of the area (Holocene period) and may contain cultural materials on the surface or buried by other lake deposits, Qal alluvium, or Qs sand dunes. Relatively low-energy alluvial movement of sediments would be conducive to the preservation of archaeological materials and the spatial associations among them. Poorer preservation of these spatial associations is expected in sites located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash. Preservation

may also be poor due to high-energy wave action along eastern shoreline as a result of strong winds from the west.

Several of the ancient shorelines have been associated with estimated dates, potentially giving clues to the ages of the sites that cluster along their edges. One of the latest Holocene shorelines is located at 373 and 374 feet in elevation and is estimated to be 12,000 years old. The shoreline between 367 and 370 feet in elevation appears to be between 8,000 and 12,000 years old, and the shoreline at 364 feet is estimated to be between 5,000 and 12,000 years old. The most recent shoreline is located at 360 feet and appears to have been created during the past few thousand years.

Overall, the majority of the proposed site footprint is covered in deposits of Holocene age. Staff considers these deposits to have a moderate-to-high potential to contain well-preserved, buried cultural materials. However, these materials would be expected within approximately 2 feet of the modern ground surface, in sediments stratigraphically above the Qoaf alluvium. The potential for artifacts within the Qoaf alluvial deposits, in consideration of the apparent Pleistocene age of those deposits, is considered slight. The highest density of sites is expected in association with ancient lakeshores reflecting human utilization of plant and animal resources flourishing near this desert water source. These sites are also expected to be the best preserved since the gentle slope would result in low-energy sheet wash. The exception is those sites located in the McCoy-Palen Mountain valley, where moderate-energy sheet wash may have caused disturbance and potentially more deeply buried sites. Some of these sites may be dated by their association with particular shorelines.

These geoarchaeological studies indicate that the areas of highest archaeological sensitivity are located in the southeastern part of the GSEP site footprint, near the ancient shores of Ford Dry Lake.

Results of Windshield Survey for Built-Environment Resources

The applicant also sought to identify standing structures that would be 45 years of age or older in 2010 (Farmer et al. 2009, app. F). The built-environment inventory covered the PAA of the linear facilities and a 0.5-mile survey buffer. In consultation with Energy Commission staff, it was determined that a built-environment survey was not required for the plant facility PAA since no historical architectural resources were identified within several miles of the site footprint. Fieldwork was conducted in July of 2009, resulting in the identification of two linear built-environment resources along the proposed linear facilities corridor. The historian for the applicant identified and recorded portions of the Blythe-Eagle Mountain Transmission Line and Wiley's Well Road within the built-environment study area, but did not evaluate them for their eligibility to be listed on the National Register of Historic Places (NRHP) or CRHR.

Summary of Identified Cultural Resources in the GSEP PAAs and Vicinity

Overall, previous projects and the cultural resources surveys of the applicant have identified a total of 538 cultural resources within the PAAs and in the near vicinity (**Cultural Resources Tables 7** and **8**). These resources include 362 archaeological sites, 177 archaeological isolates, and 2 linear built-environment resources.

The prehistoric resources include 318 archaeological sites, with 6 additional multi-component sites containing prehistoric components, and 141 isolated artifacts. These sites primarily consist of trails, trail-associated ceramic scatters and petroglyphs, sparse artifact scatters, and possible temporary campsites. Ethnographic sources suggest that portions of the Mojave Desert distant from water sources were primarily used for travel and ritual activities rather than for the collection of resources (Cleland 2005). These activities are associated with trails, trail-associated ceramic scatters, and petroglyphs. The sparse artifact scatters are primarily prehistoric flakes and cores. These tend to blend into the prehistoric isolates, which are also predominantly lithics, forming a landscape with regular but diffuse evidence of prehistoric human activities. These activities appear to be related to stone tool manufacturing and maintenance, possibly tied to the collection of wild resources.

Interestingly, travel-related sites were not present in the proposed site footprint and linear facilities corridor, but they are well preserved in desert pavement especially along the foothills of the McCoy Mountains. Ethnographic sources and other archaeological projects in the region mention prehistoric trails leading to McCoy Spring National Historic District, at least four other natural “tanks” within the McCoy Mountains, and along the I-10 corridor (Johnson and Johnstone 1957; McCarthy 1993). Road construction in this corridor may well have destroyed evidence of the prehistoric trail that preceded the modern transportation routes and associated natural gas and electric lines. McCarthy’s (1993) work at McCoy Spring suggests that prehistoric trails potentially crossed the proposed site footprint and linear facilities corridor. However, these trails are easiest to see on landforms with desert pavement, which are rare in the GSEP site footprint. Linear alignments of deliberate “pot drops” (isolated scatters of sherds from a single pot, possibly associated with sacred activity) (Sutton et al. 2007) and artifact scatters consisting of only ceramics (McCarthy 1993) are both indications of nearby trails. Clear evidence of trails was not identified in the GSEP site footprint, its linear facilities corridor, or its immediate vicinity. However, secondary indications, such as pot drops, were found during archaeological survey, and multiple recorded trails run in the direction of the GSEP site footprint (McCarthy 1993, Fig. 10).

Through its analysis, staff believes the 248 trails and trail-associated sites described above contribute to the Prehistoric Trails Network Cultural Landscape(PTNCL), a potentially NRHP- and CRHR-eligible cultural landscape whose boundaries have yet to be determined but which include the McCoy Spring National Register District, Ford Dry Lake, and the trails leading between them and other important destinations, such as the Colorado River to the east and Corn Springs to the west. Sites that are contributors to the PTNCL are both archaeological and ethnographic resources.

Sites with features and the densest concentrations of artifacts appear to be located along these trails, at water sources, and around the edges of Ford Dry Lake. Most archaeologists have referred to large sites at water sources as temporary camps. Clearly the lake edge would have been an attractive place to camp when traveling, an excellent place to collect resources when water was temporarily present, and a possible permanent village location when water was present for long periods. The lack of midden on the surface of any of the recorded lake shore sites suggests that these sites had short-term, resource-gathering, resource-processing, and residential functions. As many of these sites have ground stone, the temporary camps appear to date after the Paleo-

Indian period. Further, most of the sites also have ceramics, suggesting that they have components from the Late Prehistoric period (Sutton et al. 2007). These lakeside camps are also possible contributors to the PTNCL.

The historic-period resources include 34 archaeological sites, with 6 additional multi-component sites containing historic-period components, and 36 isolated artifacts. Most of these sites and artifacts reflect movement through the area by automobile and military maneuvers associated with the DTC/C-AMA. These sites are primarily debris scatters. Some are mainly domestic debris and may have been dumped by passing travelers or off-road vehicle drivers. Others are a mix of domestic military debris, suggesting they are the remains of temporary military camps that were part of the DTC/C-AMA. Occasional military features such as earthen mounds and possible foxholes have also been noted. The historic-period isolates reflect these same kinds of activities. Other known, common historic-period activities, including mining and ranching, are not well represented.

Through its analysis, staff believes the World War II-Era DTC/C-AMA sites described above contribute to a potentially eligible cultural landscape (historic district) whose boundaries include all of the proposed GSEP's PAAs.

Two linear built-environment resources were identified within the proposed linear facilities corridor: Blythe-Eagle Mountain Transmission Line and Wiley's Well Road. The transmission line is associated with regional population growth during the 1950s. Wiley's Well Road is associated with transportation and regional mining efforts, beginning in the 1860s and continuing until the 1960s.

To summarize, Tetra Tech reported that 17 sites were previously recorded within 2 miles of the GSEP site footprint and 20 sites were previously recorded within 1 mile of the transmission line. As a result of their Class II and Class III surveys for GSEP, Tetra Tech reported identifying an additional 103 sites, totaling 140 sites in the project vicinity (Farmer et al 2009).

Energy Commission staff came to different conclusions. After a number of communications between Tetra Tech and Energy Commission staff (CEC 2009a, CEC 2009c, CEC 2009f), staff concluded that a total of 362 sites were located in the vicinity of GSEP (**Cultural Resources Tables 7** and **8**). Eighteen of these resources are in the GSEP vicinity but would not be impacted by the project. In addition, 52 of these resources have been avoided by NextEra through changes in the size and shape of the GSEP facility footprint, as well as the route of the linear corridor. The remaining 295 resources would be subject to either direct or indirect impacts from GSEP. Forty-three resources—24 within the site footprint and 19 within the linear corridor—would be subject to direct impacts. At least 248 additional resources associated with the PTNCL in the ethnographic PAA would be subject to indirect impacts. These resources include 224 sites identified by McCarthy and 24 sites identified by previous researchers in the GSEP vicinity. Three resources identified by previous researchers were also identified by McCarthy, and are therefore only counted once. These resources are summarized below in **Cultural Resources Table 9**.

CULTURAL RESOURCES Table 9
Summary of Cultural Resources in and Near GSEP PAAs and their Locations

	Prehistoric Sites	Historic Sites	Multi-Component	Unknown Sites	Built Environ-ment	Total Resources
Vicinity	7	7	1	1	2	18
Avoided	35	14	4	0	0	53
Site Footprint	19	4	1	0	0	24
Linear Corridor	9	9	0	1	0	19
Ethno-graphic PAA	248	NA	NA	NA	NA	248
Total Resources	318	34	6	2	2	**362**

C.3.5 CRHR EVALUATIONS OF CULTURAL RESOURCES

Energy Commission staff evaluated cultural resources in the GSEP inventory (except isolates) according to CEQA guidelines. In a prior effort to compress the evaluation process and coordinate with BLM as they fulfill their obligations under NEPA and Section 106 of the NHPA, in the Staff Assessment/Draft Environmental Impact Assessment (SA/DEIS) staff developed an alternative evaluation process, discussed below, where all impacted resources were assumed to be eligible and therefore subject to avoidance or mitigation through data recovery. Staff made this assumption to allow GSEP certification review to proceed more rapidly. Therefore, in the current document, staff determinations of eligibility and staff determinations of impacts are inherently tied together. In the following section, the guidelines and process used by staff to evaluate resources is summarized. This summary is followed by detailed descriptions and evaluations of each resource organized by type, including prehistoric, historic-period, dual-component, built-environment, and cultural landscapes.

C.3.5.1 DETERMINING THE HISTORICAL SIGNIFICANCE OF CULTURAL RESOURCES

CEQA requires the Energy Commission, as the lead state agency for the GSEP, to evaluate the historical significance of cultural resources by determining whether they meet several sets of specified criteria. Under CEQA, the definition of a historically significant cultural resource is that it is eligible for listing in the CRHR, and such a cultural resource is referred to as a "historical resource," which is a "resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CRHR", or "a resource listed in a local register of historical resources or identified as significant in a historical resource survey meeting the requirements of section 5024.1 (g) of the Public Resources Code," or "any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the

agency's determination is supported by substantial evidence in light of the whole record" (Cal. Code Regs., tit. 14, § 15064.5(a)). The term, "historical resource," therefore, indicates a cultural resource that is historically significant and eligible for the CRHR.

Consequently, under the CEQA Guidelines, to be historically significant, a cultural resource must meet the criteria for listing in the CRHR. These criteria are essentially the same as the eligibility criteria for the NRHP. In addition to being at least 50 years old,[11] a resource must meet at least one (and may meet more than one) of the following four criteria (Pub. Resources Code, § 5024.1):

- Criterion 1, is associated with events that have made a significant contribution to the broad patterns of our history;
- Criterion 2, is associated with the lives of persons significant in our past;
- Criterion 3, embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values; or
- Criterion 4, has yielded, or may be likely to yield, information important to history or prehistory.

Historical resources must also possess sufficient integrity of location, design, setting, materials, workmanship, feeling, and association to convey their historical significance (Cal. Code Regs., tit. 14, § 4852(c)).

Additionally, cultural resources listed in or formally determined eligible for the National Register of Historic Places (NRHP) and California Registered Historical Landmarks numbered No. 770 and higher are automatically listed in the CRHR and are therefore also historical resources (Pub. Resources Code, § 5024.1(d)). Even if a cultural resource is not listed or determined to be eligible for listing in the CRHR, CEQA allows a lead agency to make a determination as to whether it is a historical resource (Pub. Resources Code, § 21084.1).

C.3.5.2 APPROACHES TO CRHR ELIGIBILITY EVALUATIONS

Under CEQA, only CRHR-eligible cultural resources that the proposed project could potentially impact need be considered in staff's recommendations for mitigation measures for project impacts. Consequently, staff seeks CRHR eligibility recommendations for those cultural resources subject to possible project impacts. The existing documentation for previously known cultural resources may include CRHR eligibility recommendations, and the applicant's cultural resources consultants may make CRHR eligibility recommendations for newly identified cultural resources they discover and record in their project-related surveys.

To determine which of the cultural resources in the project's inventory are eligible for the CRHR, staff usually obtains additional data on the resources likely to be impacted by the proposed project. Staff typically concludes all investigations necessary to identify, evaluate the CRHR eligibility of, and assess a proposed project's impacts to the cultural

[11] The Office of Historic Preservation's Instructions for Recording Historical Resources (1995) endorses recording and evaluating resources over 45 years of age to accommodate a potential five-year lag in the planning process.

resources in a project's areas of analysis prior to the Energy Commission certification of the project. Where CRHR-eligible cultural resources are impacted, the conclusion of these investigations prior to certification enables staff to develop refined measures to mitigate significant impacts.

With the submission to the Energy Commission in August, 2009, of near simultaneous applications from five large solar power projects on BLM-managed lands, all having a very short time frame in which to qualify for American Recovery and Reinvestment Act (ARRA) funds, staff developed a more accelerated approach to the pre-certification review of cultural resources. Accepted by the BLM, the State Historic Preservation Officer (SHPO), and the Energy Commission legal department, this approach, in November, 2009, was offered exclusively to the applicants for four of these projects: Genesis Solar Energy Project, Blythe Solar Power Project, Palen Solar Power Project, and Ridgecrest Solar Power Project, and in December, 2009, the applicants for these four projects, including GSEP, accepted this approach.

With this approach, staff expected to ensure the thorough consideration and treatment of all of the identified resources through consultation among all stakeholders and execution of a Programmatic Agreement (PA)[12], which staff subsequently would incorporate, by reference, into the final Energy Commission-BLM joint document, the Supplemental Staff Analysis/Final Environmental Impact Statement. The primary benefit of this approach was , where cultural resources are many and project impacts are wide-scale, a substantial reduction, prior to certification, of time spent data-gathering for evaluations and of time spent writing cultural resources evaluation assessments.

In staff's GSEP SA/DEIS, under this approach, staff did not evaluate the historical significance of each individual resource, but, rather, assumed that all of the known resources were eligible for the NRHP and the CRHR, with the exception of any resources for which staff had sufficient information in hand to determine the resource's ineligibility for either register. Additionally, staff assumed that the project's impacts to all assumed register-eligible resources would have to be mitigated by means of avoidance or data recovery.

The BLM decided in April, 2010, to produce final environmental documents for the GSEP, the Blythe Solar Power Project, the Palen Solar Power Project, and the Ridgecrest Solar Power Project separate from those of the Energy Commission. Consequently, the Energy Commission, no longer bound by the BLM's need for long public review periods, decided to issue its final documents for the projects considerably earlier than had originally been scheduled. Together these two decisions foreclosed

[12] In accordance with 36 CFR § 800.14(b), PAs are used for the resolution of adverse effects to cultural resources for complex project situations and when effects on historic properties(resources eligible for or listed in the NRHP) cannot be fully determined prior to approval of an undertaking. The BLM will prepare a PA in consultation with the ACHP, the SHPO, the Energy Commission, interested Native American groups, and the public at large (including tribal governments as part of government to government consultation). The PA will govern the conclusion of the identification and evaluation of historic properties (eligible for the NRHP) and historical resources (eligible for the CRHR), as well as the resolution of any significant effects that may result from the proposed or alternative actions. Historic properties and historical resources are significant prehistoric and historic cultural resources as determined by Energy Commission and BLM staff.

Energy Commission cultural resources staff's plan, under the approach discussed above, to incorporate into the BLM's PA the GSEP impact mitigation measures required under CEQA. Instead, staff has written and will recommend to the GSEP Siting Committee GSEP conditions of certification to provide for the project impact mitigation staff has identified as necessary.

At this time it is uncertain whether BLM's PA will require a conventional NRHP- and/or CRHR-eligibility assessment phase for all or part of the GSEP cultural resources inventory, but this possibility has caused staff to reconsider its recommended field protocols under staff's current approach, so as to incorporate register-eligibility assessment. In anticipation of BLM's possible change of approach, and wanting to facilitate an easier reconciliation between the requirements of the Commission's conditions of certification and those of the BLM's PA, Energy Commission staff has included in its recommended conditions of certification the register-eligibility assessment of each cultural resource, but not as a separate phase. Rather, staff has provided for register-eligibility assessment in an abbreviated form, known in Cultural Resources Management practice as a "compressed Phase II-Phase III." Essentially this means each archaeological site would be re-visited once, fully recorded (if this was not already done), and tested for its information values ("Phase II"). If those meet the criteria for NRHP and/or CRHR eligibility, data recovery ("Phase III") would ensue during the same visit.

In the case of GSEP, all sites staff assumed to be CRHR eligible are sites whose existing information led staff to believe they would only require Phase II-level work. Sites that staff determined eligible are sites whose existing information led staff to the preliminary conclusion that both Phase II- and Phase III-level work would be required.

If buried deposits are <u>not</u> present at an archaeological site, the field portion of data recovery will be considered complete at that site, and ground disturbance by the applicant may begin in that location prior to the completion of a formal cultural resources report. The Cultural Resources Monitoring and Mitigation Plan (CRMMP) (**CUL-5**) will contain detailed plans for the compressed Phase II-Phase III activities at each site.

The compressed Phase II-Phase III protocol differs only slightly from the "phased" protocol staff expected to recommend under the approach employed in the SA/DEIS, as originally presented to the GSEP applicant. The original protocol also would have entailed a single site visit for the conduct of progressively more data-extractive activities until a representative sample of the data that make the site register-eligible was achieved. The compressed Phase II-Phase III protocol just adds a field determination of register-eligibility, based on a list of established criteria, and a brief consultation with the CEC and BLM by telephone. In contrast, if BLM's PA includes a conventional Phase II NRHP-eligibility assessment, field teams would

- go into the field and re-visit all sites,
- test them for information values,
- leave the field,
- write a report with recommendations on each site's eligibility and a proposal of data recovery procedures,

- receive concurrence or arrive at agreement on eligible sites and data recovery procedures, and
- return to the field to undertake data recovery.

One of the biggest costs of cultural resources is getting "geared up": marshalling staff, renting equipment, arranging lodging, traveling to the location, etc. For the compressed Phase II-Phase III protocol, gearing up would only have to happen once, which saves time and money. Moreover, at the discretion of the archaeologist, the excavation of buried features (a Phase III activity) could begin prior to the completion of determining the extent of the site (a Phase II activity) to further accelerate the process of data recovery.

Consequently, staff believes this modification to the previous approach will not increase the cost of the recommended mitigation or require more time to complete. Making this change to the previous approach is justified to have conditions that can more readily be reconciled with BLM's requirements in their PA.

One final aspect of staff's register-eligibility assessment is which register, the NRHP or the CRHR, staff considered in making GSEP cultural resources evaluations. For the SA/DEIS, staff considered both because, under NEPA and Section 106, BLM must consider NRHP eligibility, while Energy Commission staff must make CRHR eligibility determinations to identify historical resources for CEQA purposes. For this RSA, staff is not required to make NRHP determinations for CEQA purposes. But for some cultural resources located within GSEP's PAAs, staff has opted to consider NRHP eligibility because the federal guidelines for NRHP eligibility for some kinds of resources are more developed than state guidance. This is the case for cultural landscapes and for Traditional Cultural Properties, both of which are important resource types in the GSEP cultural resources inventory. Moreover, once a resource has been listed in or formally determined eligible for the NRHP, it is automatically listed on the CRHR, and thus is a historical resource under CEQA. Staff's determinations of NRHP eligibility in this document should be considered as recommendations. Final NRHP determinations will be made by BLM staff.

C.3.5.3 NRHP AND CRHR EVALUATIONS AND DESCRIPTIONS OF CULTURAL RESOURCES IN THE GSEP PAAS

Energy Commission staff did not evaluate all 365 known resources for eligibility for listing on the NRHP and CRHR. Instead, staff assumed that all sites that would be impacted would be eligible (see previous subsection). As a result, staff focused its evaluation efforts on the 43 resources expected to be directly impacted by GSEP. The goal of this evaluation was to determine if any of these 43 resources were not eligible so avoidance or mitigation would be unnecessary. Staff then briefly reviewed the 322 remaining resources to determine if they were potential contributors to the PTNCL. All 224 resources identified by McCarthy, and an additional 24 resources identified by other researchers, were identified as contributors. These 248 resources were considered to be both archaeological and ethnographic resources within the boundaries of the GSEP ethnographic PPA and potentially subject to indirect impacts. These resources were evaluated as a group rather than individually. Many of these PTNCL contributors are located within the boundaries of the McCoy Spring National Register District. The

district is the only cultural resource in the vicinity of the GSEP that is already listed on both the NRHP and the CRHR, for its contribution to Mojave Desert prehistory under NRHP Criterion D. In all, staff has assumed that these 248 resources are eligible for listing on the NRHP and CRHR as contributors to PTNCL. Some of the sites may be individually eligible as well.

Tetra Tech evaluated 103 other known and newly identified sites and recommended that four resources (CA-Riv-0663, CA-Riv-9072, CA-Riv-9224, CA-Riv-9255) may be eligible for listing in the NRHP and the CRHR. Although Tetra Tech was aware of the existence of the McCoy Spring National Register District, the district and its contributors were not identified as potentially subject to effects from GSEP.

Staff's evaluations for the NRHP and the CRHR are broken down according to site type: prehistoric, historic, dual component, built environment, and cultural landscapes. Of the 43 individual resources and 2 landscapes (including 248 PTNCL contributors) evaluated, Energy Commission staff recommends that:

- 15 resources (all prehistoric) are not eligible;
- 24 resources be assumed eligible (including CA-Riv-9255), under CRHR Criterion 4;
- the PTNCL (and its 248 contributors) be assumed eligible under NRHP Criteria A and D
- the DTCCL be assumed eligible under NRHP Criterion D;
- 4 individual resources are eligible (CA-Riv-0260, CA-Riv-0663, CA-Riv-9072 and Wiley's Well Road), under CRHR Criterion 4; and
- the portions of the two linear built-environment resources within the built-environment PAA not be considered eligible for listing in the CRHR. Other portions of one of them, Wiley's Well Road, however, should be considered eligible

The descriptions and evaluations of the 43 individual resources and 2 cultural landscapes are presented below. Staff used information from a number of sources including archaeological research, preliminary technical reports (Farmer et al. 2009 and app. G, DPR 523 forms; TTEC 2010e), email correspondence, and discussions that were held at workshops on December 31 in 2009 and January 6, April 19, and April 23, in 2010.

Prehistoric Archaeological Resources Evaluations and Descriptions

Staff evaluated 27 individual prehistoric archaeological resources that would be subject to direct impacts from GSEP, and recommends that 15 are not eligible, 9 should be assumed eligible, and 3 are eligible. The characteristics of the eligible and assumed eligible sites are included in **Cultural Resources Table 10**. Six of these sites are potential contributors to the PTNCL. An additional 248 potential contributors to the PTNCL would be subject to indirect impacts from GSEP. These indirect impacts are evaluated for the landscape as a whole.

CULTURAL RESOURCES Table 10
Summary of NRHP- and CRHR-Eligible Prehistoric Cultural Resources for Which Avoidance or Mitigation of Project Impacts Would Be Required

	Temporary Camp	Artifact Scatter	Lithic Scatter	Ceramic Scatter	Total
PTNCL Contributor Direct Impact	3	2	0	1	6
Prehistoric Other	0	5	1	0	6
Total	3	7	1	1	**12**

CA-Riv-0260 (P33-00260)

This site is an oblong prehistoric archaeological deposit approximately 250,000 square m (61.8 acres) in area. The surface component of the site measures approximately 500 m from east to west and 500 m from north to south. It is located on the south edge the linear facilities corridor approximately 0.2 miles north of I-10. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface consists of an open exposure and a well stabilized sand sheet. The site was originally recorded in 1965 and updated in 1981, 1989, and 2008. The site was apparently not revisited by the archaeologist for the applicant. These multiple visits suggest that despite disturbance by at least three separate roads, a utility line, and an underground pipeline the site retains good integrity and the potential to contain subsurface deposits.

The site includes a low to moderate density artifact scatter with three artifact concentrations along the southern edge of the site. It appears to consist of at least 1,000 artifacts, including prehistoric lithics, ceramics, groundstone, and FAR (fire-affected rock—rock that shows evidence of having been in prolonged contact with fire). Two possible hearths and a pot drop were also noted in 1989. Artifacts are eroding out of deflated areas, suggesting part of the site remains intact and subsurface. The actual depth of the site has not been determined, however.

Concentration 1 measures 15 m from east to west and 25 m from north to south. It consists of more than 500 sherds, 80 pieces of debitage, and 40 lithic tools. Concentration 2 is located approximately 30 m to the east of Concentration 1. It measures 40 m from east to west and 20 m from north to south. More than 400 sherds, 20 pieces of debitage, and 40 pieces of groundstone were noted here. Concentration 3 is located approximately 25 m northwest of Concentration 2. It consists of a tight grouping of artifacts within a 1-m^2 area. More than 100 sherds, 20 pieces of debitage, and 20 pieces of groundstone were noted here. One or more of these concentrations may include single broken ceramic vessels, or pot drops. Staff notes that pot drops in non-random patterns have been associated with trails along main travel routes as well as trails that approach springs and tanks (Schaefer and Laylander 2007, p. 254). No evidence of a trail was noted near this site, but the close presence of prehistoric trails known to follow the I-10 corridor, McCoy Spring, and Ford Dry Lake itself, suggest that ceremonial pot drops may be present in the vicinity. These patterns are discussed in

more detail, below, under “Summary of NRHP- and CRHR-Eligible Cultural Resources for the Genesis Solar Energy Project.”

The more particular physical context for site CA-Riv-0260 is uncertain as the site is located in an area not examined in detail by the geomorphologist (see “Present Process Geomorphology” and “Results of Geoarchaeological Investigations” subsections, above). However, surface indications suggest that the site appears to include the lake deposits of the Ql unit as well as the Holocene sand sheet of the Qsr unit. The possibility of buried cultural resources within the Qsr unit is expected to be moderate within approximately 2 feet of the modern ground surface, in sediments stratigraphically above the Qoaf alluvium. The possibility of buried cultural resources within the lake deposits is expected to be moderate. However, the depth of these deposits is undetermined. Subsurface materials that offer the potential to yield information important to prehistory or history appear to be present here.

Previous researchers suggest that the site served as a prehistoric temporary camp, but did not provide any suggestions about its age. Staff notes that the presence of ceramics is generally consistent with the Late Prehistoric period (1100 cal BC to Contact). Ramirez et al. (2008) recommend that this site be found eligible for listing in the NRHP under Criterion D. They note that the artifacts at the site appear to have well preserved spatial relationships, include datable materials, and include sufficient quantity of artifacts to allow statistically significant research. In addition previous research in the region suggests that the presence of pot drops within the boundaries of larger prehistoric sites indicates the presence of a trail. As a large, residential site adjacent to a water source and associated with pot drops, this site may be a contributor to the PTNCL. The above considerations lead staff to recommend that site CA-Riv-0260 (P33-00260) is eligible for listing in the CRHR under Criterion 4, because the resource has yielded and has potential to yield information important to the middle-to-late prehistory of the Mojave Desert.

CA-Riv-0663 (P33-00663)

This site is an oblong prehistoric archaeological deposit approximately 753,600 square m (186.2 acres) in area. The surface component of the site measures approximately 2400 m from east to west and 400 m from north to south. It is located on the linear facilities corridor approximately 0.5 miles north of I-10, and appears to completely surround a historic-period dry well. Soils on the present site surface range from very fine to fine sand to very fine to medium sandy silt with small and medium gravels. Vegetation varies on site from none to patches of Creosote bush scrub and low annual grasses. Artifacts are eroding out of deflated areas, suggesting that some of the site remains intact and subsurface. The actual depth of the site has not been determined, however.

The site was originally recorded in 1974 and updated in 1976, 1989, and 2010. These visits identified the site as a low to moderate density prehistoric artifact scatter consisting of thousands of artifacts, several deflated hearths, and at least four artifact concentrations. It is possible that CA-Riv-6900, located immediately to the south, may be another loci of CA-Riv-0663. Overall, pottery scatters at the site are characterized as small, localized pot drops of both buffware and brownware. Staff notes that pot drops in

non-random patterns have been associated with trails along main travel routes as well as trails that approach springs and tanks (Schaefer and Laylander 2007, p. 254). No evidence of a trail was noted near this site, but the close presence of prehistoric trails known to follow the I-10 corridor, McCoy Spring, and Ford Dry Lake itself, suggest that ceremonial pot drops may be present in the vicinity. These patterns are discussed in more detail in subsection “Summary of NRHP- and CRHR-Eligible Cultural Resources for the Genesis Solar Energy Project.” All stages of lithic reduction are represented at the site, with secondary flakes the most common, followed by primary flakes. Lithic material types noted include quartzite, rhyolite, chert, and chalcedony. Milling equipment noted includes manos made of granite and metates of greenish shale (Pallette et al. 1989).

Three artifact concentrations—1, 2 and 4—are located in the southwest portion of the site. Concentration 1 consists of fragments of tabular shale (FAR) and chalcedony debitage measuring 30 m from east to west and 70 m from north to south. Concentration 2 is similar to Concentration 1, but has a higher debitage density in an area measuring 30 m from east to west and 60 m from north to south. A fourth concentration, number 3, occupies the west bank of an arroyo at the eastern edge of the site. It measures 50 m from east to west and 40 m from north to south. This area contains a 2 m long rock alignment, 2 buffware sherds, 2 Tizon Brownware sherds, 3 pieces of groundstone, and an unspecified amount of debitage. Concentration 4 is located at the south edge of the site, in an area measuring 8 m from east to west and 6 m from north to south. Five pieces of groundstone, an unspecified number of buffware sherds, and a concentration of FAR were noted in this location. The site was revisited by Tetra Tech during the GSEP linear corridor survey in the winter of 2010. Their survey found that the site boundary extended to the north. In this area they found chert, quartz, and quartzite debitage, ceramic fragments, groundstone, and FAR.

The more particular physical context for site CA-Riv-0663 is uncertain as the site is located in an area not examined in detail by the geomorphologist (see “Present Process Geomorphology” and “Results of Geoarchaeological Investigations” subsections, above). However, surface indications suggest that the site appears to include the lake deposits of the Ql unit as well as the Holocene sand sheet of the Qsr unit. The possibility of buried cultural resources within the Qsr unit is expected to be moderate within approximately 2 feet of the modern ground surface, in sediments stratigraphically above the Qoaf alluvium. The possibility of buried cultural resources within the lake deposits is expected to be moderate. However, the depth of these deposits is undetermined. Subsurface materials that offer the potential to yield information important to prehistory or history appear to be present here.

Previous researchers suggest that the site served as multiple overlapping prehistoric shoreline campsites and activity areas, potentially dating to multiple time periods (Pallette et al. 1989). The groundstone implements present may be indicative of the expansion of milling technology in the Amargosa II and III phases of the Late Archaic time period (4,000 to 1,500 BP), when collector type adaptive strategies were more firmly in place. The prehistoric ceramics, including Tizon Brownware and Lower Colorado Buffware, date to the Late Prehistoric Period (1100 cal BC to Contact).

Tetra Tech recommends that this site be found eligible for listing in the NRHP under Criterion D. They note that the artifacts at the site appear to have well preserved spatial relationships, include datable materials, and include sufficient quantity of artifacts to allow statistically significant research. In addition previous research in the region suggests that the presence of pot drops within the boundaries of larger prehistoric sites indicates the presence of a trail. As a large, residential site adjacent to a water source and associated with pot drops, this site may be a contributor to the PTNCL. The above considerations lead staff to recommend that site CA-Riv-0663 (P33-00663) is eligible for listing in CRHR under Criterion 4, because the resource has yielded and has potential to yield information important to the middle-to-late prehistory of the Mojave Desert.

CA-Riv-9047 (P33-17431)

This site is an oblong prehistoric archaeological deposit approximately 2,025 square m (0.5 acre) in area. It is located near the southern boundary of the site footprint. The long axis of the deposit parallels a north-south trending ephemeral wash cutting through the sand and gravel of the site surface. The predominant vegetation on the site appears to be Mojave creosote bush scrub. Other information about the physical character of the site surface is unspecified. The surface component of the site measures approximately 62 m from north to south and 35 m from east to west. It consists of a sparse scatter of 5 artifacts which includes 1 cortical and 3 interior flakes of quartz and 1 cortical flake of chert. Further character of the artifacts at this site is unreported. The depth of the site deposit is undetermined.

The more particular physical context for site CA-Riv-9047, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be the edge of the oldest lakeshore (Ql) where it intersects with the Holocene sand sheet of the Qsr unit and the Holocene alluvium of the Qal unit. The possibility of buried cultural resources within these units is expected to be moderate within approximately 2 feet of the modern ground surface, in sediments stratigraphically above the Qoaf alluvium. The potential for artifacts within the Qoaf alluvial deposits, in consideration of the apparent Pleistocene age of those deposits, is considered slight. This site is also located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash and in correspondingly poorer preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Nonetheless, materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant suggest no age or functional interpretation for the site, but suggest that the dearth of cultural constituents indicates that prehistoric activity at the site was very brief in duration. The archaeologists recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The sparse character of the surface assemblage and the apparent absence of materials that would facilitate the placement of the deposit in time seem to indicate that the site does not have the potential to yield information important to prehistory. Staff therefore recommends that site CA-Riv-9047 (P33-17431) is not eligible for listing in the CRHR.

CA-Riv-9048 (P33-17432)

This site is an oblong prehistoric archaeological deposit oriented north-south approximately 2,025 square m (0.5 acre) in area. It is located near the near the southern boundary of the site footprint. The predominant vegetation on the site appears to be Mojave creosote bush scrub. Other information about the physical character of the site surface is unspecified. The surface component of the site measures approximately 78 m from north to south and 31 m from east to west. It consists of a sparse scatter of 10 lithic artifacts which includes 3 chert flakes, 1 chalcedony flake, 1 rhyolite flake, 3 quartz flakes, and 2 quartzite flakes. The depth of the site deposit is undetermined.

The more particular physical context for site CA-Riv-9048, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be edge of the oldest lakeshore (Ql) where it intersects with the Holocene sand sheet of the Qsr unit and the Holocene alluvium of the Qal unit. The possibility of buried cultural resources within these units is expected to be moderate within approximately 2 feet of the modern ground surface, in sediments stratigraphically above the Qoaf alluvium. The potential for artifacts within the Qoaf alluvial deposits, in consideration of the apparent Pleistocene age of those deposits, is considered slight. This site is also located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash and in correspondingly poorer preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Nonetheless, materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant suggest no age or functional interpretation for the site. The archaeologists recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The sparse character of the surface assemblage and the apparent absence of materials that would facilitate the placement of the deposit in time seem to indicate that the site does not have the potential to yield information important to prehistory. Staff therefore recommends that site CA-Riv-9048 (P33-17432) is not eligible for listing in the CRHR.

CA-Riv-9051 (P33-17435)

This site is an oblong prehistoric archaeological deposit oriented northwest-southeast approximately 810 square m (0.2 acre), in area. The deposit is near the southern boundary of the site footprint. The predominant vegetation on the site appears to be Mojave creosote bush scrub. Other information about the physical character of the site surface is unspecified. The surface component of the site measures approximately 49 m from northwest to southeast and 19 m from northeast to southwest. It consists of a low density scatter of 5 prehistoric artifacts including 3 chert cortical flakes, 1 quartzite interior flake and 1 multi-directional chert core. The presence of a chert core and similar chert flakes raised the possibility that this site was potentially a single-use lithic work station. However, an in-field refit analysis revealed that none of the chert debitage co-joined with one another, or with the core. The depth of the site deposit is undetermined.

The more particular physical context for site CA-Riv-9051, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be within the Holocene sand sheet of the Qsr unit and the Holocene alluvium of the Qal unit (see

“Present Process Geomorphology” and “Results of Geoarchaeological Investigations” subsections, above). The possibility of buried cultural resources within these units is expected to be moderate within approximately 2 feet of the modern ground surface, in sediments stratigraphically above the Qoaf alluvium. The potential for artifacts within the Qoaf alluvial deposits, in consideration of the apparent Pleistocene age of those deposits, is considered slight. This site is also located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash and in correspondingly poorer preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Nonetheless, materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant suggest no age or alternative functional interpretation for the site. Further, the archaeologists recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The sparse character of the surface assemblage and the apparent absence of materials that would facilitate the placement of the deposit in time seem to indicate that the site does not have the potential to yield information important to prehistory. Staff therefore recommends that site CA-Riv-9051 (P33-17435) is not eligible for listing in the CRHR.

CA-Riv-9072 (P33-17456)

This site is an oblong prehistoric archaeological deposit approximately 15,246,000 square m (350 acres) in area. It is located in the southwest corner of the site footprint. Only a small portion of the east end of the site overlaps with the proposed GSEP facility footprint. Multiple minor seasonal drainages run from north to south through the site. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface consists of a mosaic of desert pavement interspersed with sand and gravel alluvium. The surface component of the site measures approximately 1,820 m from east to west and 980 m from north to south. The site was originally recorded during the Class II survey. Its boundaries were subsequently enlarged when it was revisited during the Class III survey.

The site includes a low to moderate density artifact scatter and three artifact concentrations. Due to the size of the site the total number of artifacts was estimated. It appears to consist of at least 1,000 artifacts, predominantly prehistoric lithics. The lithic material types present include chert, jasper, quartzite, and crystalline quartz. The lithic scatter is sparse but is characterized by intermittent pockets of elevated artifact density which could represent intensified activity areas or, given the dynamic landform (e.g. sheet flow, seasonal drainages, to erosion), an increased surface visibility. All stages of reduction were in abundant evidence, suggesting that a full range of lithic industry (from testing/procurement to biface/tool manufacture and finishing) was practiced here. At least 12 lithic tools were identified including 1 black chert Rose Spring projectile point, 1 chert Cottonwood Triangular point, 2 quartz bifaces, 3 stage-1 black chert bifaces, 1 chert scraper, 2 chert cores, 2 quartzite cores, and an unknown number of core and flake-based tools. Other artifacts noted at the site included 33 quartzite metates or metate fragments, 5 quartzite manos, and 1 fragment of marine clam shell (species unknown). No evidence of a subsurface deposit was noted, but the actual depth of the site has not been determined.

Two artifact concentrations were noted in the western half of the site and a third along the north central site boundary. Concentration 1 consists of 10 brownware sherds within a 4-m^2 area. Nine body sherds and 1 base sherd were noted. Concentration 2 is located 10 m to the south of Concentration 1. This concentration consists of 11 brownware sherds within a 2-m^2 area. Nine body sherds, 1 neck sherd, and 1 rim sherd were observed. Four additional sherds were noted several m to the south. The archaeologists for the applicant suggest that both of these concentrations represent single, broken ceramic vessels, or pot drops. Staff notes that pot drops in non-random patterns have been associated with trails along main travel routes as well as trails that approach springs and tanks (Schaefer and Laylander 2007, p. 254). No evidence of a trail was noted near this site, but the close presence of prehistoric trails known to follow the I-10 corridor, McCoy Spring, and Ford Dry Lake itself, suggest that ceremonial pot drops may be present in the vicinity. These patterns are discussed in more detail in subsection Summary of NRHP- and CRHR-Eligible Cultural Resources for the Genesis Solar Energy Project." Concentration 3 is a deflated hearth with approximately 21 pieces of fire-affected rock (FAR); it was identified within a north-south trending seasonal drainage. The hearth measures 98 centimeters (cm) from northeast to southwest and 68 cm southeast to northwest. In addition, two quartzite choppers, seven quartzite hammerstones, a rhyolite dome scraper, and an unmodified fragment of marine clam shell were observed.

The more particular physical context for site CA-Riv-9072, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to include the lake deposits of the Ql unit between the 377-footshoreline and the 370–373-foot shoreline as well as the Holocene sand sheet of the Qsr unit and the Holocene alluvium of the Qal unit (see "Present Process Geomorphology" and "Results of Geoarchaeological Investigations" subsections, above). The possibility of buried cultural resources within the Qal and Qsr units is expected to be moderate within approximately 2 feet of the modern ground surface, in sediments stratigraphically above the Qoaf alluvium. The potential for artifacts within the Qoaf alluvial deposits, in consideration of the apparent Pleistocene age of those deposits, is considered slight. The possibility of buried cultural resources within the lake deposits is expected to be moderate. However, the depth of these deposits is undetermined. This site is located in an area characterized by low-energy sheet wash which is conducive to the preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant do not specify a function for the site. They do suggest that the presence of ceramics is generally consistent with the Late Prehistoric (1100 cal BC to Contact). The presence of a Cottonwood Triangular projectile point supports this suggestion. Staff notes that the presence of a Rose Spring projectile point may indicate that this was a multi-component site. The Rose Spring style is associated with the Rose Spring complex which dates between cal AD 200 and cal AD 1100 (Sutton et al. 2007, p. 236). Sites from this time are often found near springs, along washes, and sometimes on lakeshores, and can include evidence of intensive occupation such as house remains.

The archaeologists for the applicant recommend that this site be found eligible for listing in the NRHP under Criterion D. They note that the artifacts at the site appear to have well preserved spatial relationships, include datable materials, and include sufficient quantity of artifacts to allow statistically significant research (Farmer et al. 2009, p. 88). In addition previous research in the region suggests that the presence of pot drops within the boundaries of larger prehistoric sites indicates the presence of a trail. As such, this site may be a contributor to the PTNCL. The above considerations lead staff to recommend that site CA-Riv-9072 (P33-17456) is eligible for listing in the CRHR under Criterion 4, because the resource has yielded and has potential to yield information important to the middle-to-late prehistory of the Mojave Desert.

CA-Riv-9073 (P33-17457)

This site is an oblong prehistoric archaeological deposit approximately 602 square feet (0.014 acres) in area. It is located near the southwest border of the proposed GSEP linear facilities corridor approximately 2.3 miles directly north of I-10. An intermittent drainage is located to the northwest of the site. The present site surface is a slightly elevated northeast-to-southwest-trending desert pavement. Further information about the present site surface is unspecified. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The surface component of the site measures approximately 17 m from northeast to southwest and 4 m from northwest to southeast. This sparse scatter of 4 prehistoric artifacts includes 1 quartzite primary flake, 1 retouched chert flake, 1 chert interior flake, and 1 chert flake tool. All of the artifacts are wind or water worn, suggesting great age. No evidence of a subsurface deposit was noted, but the actual depth of the site has not been determined.

The more particular physical context for site CA-Riv-9073, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be within the lake deposits of the Ql unit between the 377-foot shoreline and the 370–373-foot shoreline (see “Present Process Geomorphology” and “Results of Geoarchaeological Investigations” subsections, above). The possibility of buried cultural resources within the lake deposits is expected to be moderate. However, the depth of these deposits is undetermined. This site is also located in an area noted for low-energy sheet wash which may have resulted in correspondingly good preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant suggest no age or functional interpretation for the site. They further recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The sparse character of the surface assemblage and the apparent absence of materials that would facilitate the placement of the deposit in time seem to indicate that the site does not have the potential to yield information important to prehistory. Staff therefore recommends that site CA-Riv-9073 (P33-17457) is not eligible for listing in the CRHR.

CA-Riv-9084 (P33-17468)

This site is an irregularly shaped prehistoric archaeological deposit approximately 1,219,680 square m (28 acres) in area. It is located on the southern boundary of the site

footprint. Two minor seasonal drainages run from north to south through the northern portion of the site. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface consists of a mosaic of desert pavement interspersed with sand and gravel alluvium. The surface component of the site measures approximately 38 m from east to west and 70 m from north to south. The site was originally recorded during the Class II survey. Its boundaries were subsequently enlarged when it was revisited during the Class III survey. It includes a light scatter of prehistoric artifacts and two artifact concentrations in the northern part of the site. In total, it appears that 96 artifacts were present. Artifact totals for each concentration and for the site as a whole were difficult to calculate using the information provided by the archaeologists for the applicant.

Concentration 1 is an amorphous scatter of artifacts located in the central part of the site. It measures 81 m by 81 m and includes 55 predominately interior and cortical flakes of crystalline quartz, basalt, quartzite, chert, jasper, and chalcedony. Concentration 2 is located at the north end of the site 255 m northeast of Concentration 1. This feature measures 10 m by 6 m and consists of 5 chert, crystalline quart, quartzite, and basalt flakes. The presence of a “historical military part” was noted west of Concentration 2 on the site sketch map. Further information about this artifact was not specified. The remainder of the site is covered with a light scatter of artifacts which include 21 flakes, 2 complete quartzite manos, 3 complete metates (2 possible schist, 1 rhyolitic), 3 metate fragments (1 quartzite, 2 rhyolitic), 1 piece of marine shell, 1 Olivella shell bead, 1 crystalline quartz block core, 1 quartzite multi-directional core, 1 jasper multi-directional core 1 quartz biface, and 1 quartz biface fragment. Overall, interior flakes comprised the greatest share of the debitage (at 50 percent), while shatter and cortical flakes together make up about 38 percent of the scatter, indicating that primary and secondary flake production were the principal activities. No evidence of a subsurface deposit was noted, but the actual depth of the site has not been determined.

The more particular physical context for site CA-Riv-9084, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be within the lake deposits of the Ql unit between the 377-footshoreline and the 370–373-foot shoreline (see “Present Process Geomorphology” and “Results of Geoarchaeological Investigations” subsections, above). The possibility of buried cultural resources within the lake deposits is expected to be moderate. However, the depth of these deposits is undetermined. This site is also located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash and in correspondingly poorer preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Nonetheless, subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant note that one function of the site may have been stone tool manufacture and repair. Staff adds that the presence of ground stone suggests that food processing also took place here possibly indicating the site was a temporary camp. The archaeologists for the applicant further suggest that Concentrations 1 and 2 may represent two separate activity loci. It is unclear if they consider the ground stone scatter in the southern part of the site a possible third activity locus. The temporal relationships between the various parts of the site are unclear.

However, the archaeologists for the applicant mention that the presence of ground stone indicates that at least some of the deposit was created during or after the Late Archaic period (8000 to 6000 cal BC). In addition, the Olivella shell bead in the northeastern corner of the site links it to the Late Prehistoric (1100 cal AD to Contact) period.

The archaeologists for the applicant recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The rationale may be tied to the sparse character of the surface assemblage and the apparent absence of materials that would clarify the temporal relationships between the site components, indicating that the site does not have the potential to yield information important to prehistory. Without primary field data on the presence of a subsurface component for the site, staff cannot evaluate the site sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to prehistory. Staff therefore recommends that site CA-Riv-9084 (P33-17468) be assumed eligible for listing in the CRHR under Criterion 4, for the purpose of the present analysis.

CA-Riv-9206 (P33-17775)

This site is an oblong prehistoric archaeological deposit oriented north-south approximately 161 square m (0.04 acres), in area. The deposit is in the southeastern portion of the site footprint near the southern boundary, 116 m north of CA-Riv-9205/H (P33-17773). The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface consists of sandy and gravelly soils with numerous small ephemeral dry channels traversing the area. The surface component of the site measures approximately 11 m from east to west and 25 m from north to south. Observed surface cultural constituents consist of 1 cortical quartzite flake, 2 interior chert flakes, 1 chalcedony flake, and 1 granitic mano fragment. There was apparently no evidence of a subsurface deposit at the site, but its actual depth is undetermined.

The more particular physical context for site CA-Riv-9206, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be within the lake deposits of the Ql unit between the 377-footshoreline and the 370–373-foot shoreline (see “Present Process Geomorphology” and “Results of Geoarchaeological Investigations” subsections, above). The possibility of buried cultural resources within the lake deposits is expected to be moderate. However, the depth of these deposits is undetermined. This site is also located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash and in correspondingly poorer preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Nonetheless, subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant suggest that the presence of ground stone at the site may indicate a date of as early as the Late Archaic times (8000 to 6000 cal BC) or as late as the Late Prehistoric (1100 cal BC to Contact). However, they provide no functional interpretation for the site. Further, they recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. Considering the sparse character of the surface assemblage and the apparent absence

of materials that would facilitate the placement of the deposit more specifically in time, the site does not appear to have the potential to yield information important to prehistory. Staff therefore recommends that site CA-Riv-9206 (P33-17775) is not eligible for listing in the CRHR.

CA-Riv-9207 (P33-17776)

This site is a trapezoidal prehistoric archaeological deposit approximately 2,711 square m (0.7 acres) in area. It is located in the southeastern portion of the site footprint near the southern boundary, approximately 40 m north of CA-Riv-9206 (P33-17775). The present site surface consists of relatively flat sandy and gravelly soils with numerous small erosion channels. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The surface component of the site measures approximately 86 m from east to west and 73 m from north to south. This light scatter of 8 artifacts includes 4 chert cortical flakes, 1 quartzite cortical flake, 1 quartzite core, 1 chert tested cobble, and 1 soluble coffee can. The artifact scatter appears to be primarily a surface deposit, but its actual depth is undetermined.

The more particular physical context for site CA-Riv-9207, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be edge of the oldest lakeshore (Ql) where it intersects with the Holocene sand sheet of the Qsr unit and the Holocene alluvium of the Qal unit (see “Present Process Geomorphology” and “Results of Geoarchaeological Investigations” subsections, above). The possibility of buried cultural resources within these units is expected to be moderate within approximately 2 feet of the modern ground surface, in sediments stratigraphically above the Qoaf alluvium. The potential for artifacts within the Qoaf alluvial deposits, in consideration of the apparent Pleistocene age of those deposits, is considered slight. This site is also located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash and in correspondingly poorer preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Nonetheless, subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The function of the site is unspecified, however the archaeologists for the applicant note that the prehistoric lithic artifacts appear to be randomly scattered across the surface rather than clustered into tight loci. This pattern suggests that the site did not serve as a flint-knapping location. The archaeologists for the applicant suggest no temporal association or functional interpretation for the site. They also recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The sparse character of the surface assemblage and the apparent absence of materials that would facilitate the placement of the deposit in time seem to indicate that the site does not have the potential to yield information important to prehistory. Staff therefore recommends that site CA-Riv-9207 (P33-17776) is not eligible for listing in the CRHR.

CA-Riv-9208 (P33-17777)

This site is an oblong prehistoric archaeological deposit approximately 647 square m (0.2 acres) in area. It is located in the southeastern portion of the site footprint near the

southern boundary, approximately 86 m north of CA-Riv-92010 (P33-17778). The present site surface consists of relatively flat sandy and gravelly soils with numerous small erosion channels. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The surface component of the site measures approximately 25 m from east to west and 24 m from north to south. This light scatter of 8 prehistoric artifacts includes 4 chert cortical flakes, 1 quartzite cortical flake, 1 chalcedony cortical flake, 1 jasper cortical flake, and 1 chalcedony core. No evidence of a subsurface deposit was noted, but the actual depth of the site is undetermined.

The more particular physical context for site CA-Riv-9208, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be located on the Holocene sand sheet of the Qsr unit and the Holocene alluvium of the Qal unit (see "Present Process Geomorphology" and "Results of Geoarchaeological Investigations" subsections, above). The possibility of buried cultural resources within these units is expected to be moderate within approximately 2 feet of the modern ground surface, in sediments stratigraphically above the Qoaf alluvium. The potential for artifacts within the Qoaf alluvial deposits, in consideration of the apparent Pleistocene age of those deposits, is considered slight. This site is also located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash and in correspondingly poorer preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Nonetheless, subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant do not specify the function of the site however they note that the prehistoric lithic artifacts appear to be randomly scattered across the surface rather than clustered into tight loci. This pattern suggests that the site did not serve as a flint-knapping location. The archaeologists for the applicant suggest no temporal association or functional interpretation for the site. The archaeologists recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The sparse character of the surface assemblage and the apparent absence of materials that would facilitate the placement of the deposit in time seem to indicate that the site does not have the potential to yield information important to prehistory. Staff therefore recommends that site CA-Riv-9208 (P33-17777) is not eligible for listing in the CRHR.

CA-Riv-9209 (P33-17778)

This site is an oblong prehistoric archaeological deposit approximately 7,689 square m (2 acres) in area. It is located in the southeastern portion of the site footprint near the southern boundary, approximately 86 m south of CA-Riv-9208 (P33-17777). The present site surface consists of relatively flat sandy and gravelly soils, with numerous small erosion channels. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The surface component of the site measures approximately 85 m from east to west and 100 m from north to south. This light scatter of 24 prehistoric artifacts includes 7 interior flakes and 1 cortical flake of chert, 1 interior flake of quartz, 1 piece of chalcedony shatter, 3 interior flakes of jasper, 4 cortical flakes of quartzite, 2 multi-directional chert cores, 1 quartzite hammer stone, and 4 quartz monzonite metate fragments. The scatter appears to be primarily a surface deposit with some partial

subsurface artifacts, most likely the result of the movement of wind and waterborne sediment.

The more particular physical context for site CA-Riv-9209, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be within the lake deposits of the Ql unit between the 377-footshoreline and the 370–373-foot shoreline (see “Present Process Geomorphology” and “Results of Geoarchaeological Investigations” subsections, above). The possibility of buried cultural resources within the lake deposits is expected to be moderate. However, the depth of these deposits is undetermined. This site is also located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash and in correspondingly poorer preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Nonetheless, subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant do not specify a function for the site. They do suggest that the presence of ground stone is generally consistent with a Late Archaic period occupation (8000 to 6000 cal BC), but do not explain why this site could not also be consistent with other time periods when ground stone was used, such as the Late Prehistoric (1100 cal BC to Contact). Further, they recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The rationale may be tied to the sparse character of the surface assemblage indicating that the site does not have the potential to yield information important to prehistory. Without primary field data on the presence of a subsurface component for the site, staff cannot evaluate the site sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to prehistory. Staff therefore recommends that site CA-Riv-9209 (P33-17778) be assumed eligible for listing in the CRHR under Criterion 4, for the purpose of the present analysis.

CA-Riv-9210 (P33-17779)

This site is an irregularly shaped prehistoric archaeological deposit approximately 1,982 square m (0.5 acres) in area. It is located in the southeastern portion of the site footprint near the southern boundary, approximately 95 m south of CA-Riv-9209H (P33-17778). The present site surface consists of a slightly elevated terrace of alluvium, with patches of desert pavement. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The surface component of the site measures approximately 50 m from east to west and 90 m from north to south. This sparse scatter of 13 prehistoric artifacts includes 10 lithic flakes, 2 monzonite metate fragments, and 1 depleted chalcedony core with cortex. The scatter appears to be primarily a surface deposit, but the actual depth of the site is undetermined.

The more particular physical context for site CA-Riv-9210, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be within the lake deposits of the Ql unit between the 377-foot shoreline and the 370–373-foot shoreline (see “Present Process Geomorphology” and “Results of Geoarchaeological Investigations” subsections, above). The possibility of buried cultural resources within the lake deposits is expected to be moderate. However, the depth of these deposits is

undetermined. This site is also located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash and in correspondingly poorer preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Nonetheless, subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant suggest no temporal association or functional interpretation for the site. They further recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The sparse character of the surface assemblage and the apparent absence of materials that would facilitate the placement of the deposit more specifically in time seem to indicate that the site does not have the potential to yield information important to prehistory. Staff therefore recommends that site CA-Riv-9210 (P33-17779) is not eligible for listing in the CRHR.

CA-Riv-9212 (P33-17781)

This site is an oblong prehistoric archaeological deposit approximately 202 square m (0.06 acres) in area. It is located near the center of the southeastern portion of the proposed site footprint, approximately 50 m north of CA-Riv-9211H (P33-17780). The present site surface consists of sandy and gravelly soils within a minor dune and pan like area. A minor dry wash runs parallel to the long axis of the site and numerous small ephemeral dry channels traverse the area. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The surface component of the site measures approximately 32 m from north to south and 8 m from east to west. This sparse scatter of 6 prehistoric artifacts includes 1 interior chert flake, 2 quartzite cortical flakes, 1 rhyolite tested cobble, 1 chalcedony core with cortex, and 1 Desert Side Notched chert projectile point. No evidence of a subsurface deposit was noted, but the actual depth of the site is undetermined.

The more particular physical context for site CA-Riv-9212, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be located on the Holocene sand sheet of the Qsr unit and the Holocene alluvium of the Qal unit (see “Present Process Geomorphology” and “Results of Geoarchaeological Investigations” subsections, above). The possibility of buried cultural resources within these units is expected to be moderate within approximately 2 feet of the modern ground surface, in sediments stratigraphically above the Qoaf alluvium. The potential for artifacts within the Qoaf alluvial deposits, in consideration of the apparent Pleistocene age of those deposits, is considered slight. This site is also located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash and in correspondingly poorer preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Nonetheless, subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant suggest no temporal association or functional interpretation for the site. However, the presence of a Desert Side Notched projectile point suggests that the site dates to the Late Prehistoric period (cal AD 1100 to

European contact) (Sutton et al. 2007, p. 236). They further recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The sparse character of the surface assemblage seems to indicate that the site does not have the potential to yield information important to prehistory. Staff therefore recommends that site CA-Riv-9212 (P33-17781) is not eligible for listing in the CRHR.

CA-Riv-9215 (P33-17784)

This site is an irregularly shaped prehistoric archaeological deposit approximately 14,568 square m (3.6 acres) in area. It is located near the southwest corner of the southeastern portion of the proposed site footprint, north of CA-Riv-9220 (P 33-17789). A large unnamed dry wash apparently crosses the site, however the location of the wash is not marked on the sketch map. The present site surface is described as consisting of sand and gravel. Further information about the condition of the present site surface is unspecified. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The surface component of the site measures approximately 129 m from east to west and 169 m from north to south. This sparse scatter of 25 prehistoric artifacts includes 21 lithic flakes, 1 chert projectile point shoulder and base fragment (concave base, undetermined chronology), 1 biface fragment, 1 rhyolite tested cobble, and 1 6-sided quartz crystal were observed. The scatter appears to be primarily a surface deposit, but the actual depth of the site is undetermined.

The more particular physical context for site CA-Riv-9215, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be within the lake deposits of the Ql unit between the 377-footshoreline and the 370–373-foot shoreline (see “Present Process Geomorphology” and “Results of Geoarchaeological Investigations” subsections, above). The possibility of buried cultural resources within the lake deposits is expected to be moderate. However, the depth of these deposits is undetermined. This site is also located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash and in correspondingly poorer preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Nonetheless, subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant suggest no temporal association or functional interpretation for the site. They further recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The rationale may be tied to the sparse character of the surface assemblage and the apparent absence of materials that would facilitate the placement of the deposit in time, indicating that the site does not have the potential to yield information important to prehistory. Without primary field data on the presence of a subsurface component for the site, staff cannot evaluate the site sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to prehistory. Staff therefore recommends that site CA-Riv-9215 (P33-17784) be assumed eligible for listing in the CRHR under Criterion 4, for the purpose of the present analysis.

CA-Riv-9216 (P33-17785)

This site is an oblong prehistoric archaeological deposit approximately 16,511 square m (4 acres) in area. It is located along the western boundary of the southeastern portion of the proposed site footprint, approximately 205 m west of CA-Riv-9209 (P33-17778). A large unnamed dry wash apparently crosses the site, however the location of the wash is not marked on the site map. The present site surface is relatively flat and consists of the sand and gravel. Evidence of aeolian (wind-produced) processes is also present, including lag deposits and small mounds of sand next to creosote bushes. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The surface component of the site measures approximately 83 m from east to west and 317 m from north to south. Overall this site consists of approximately 78 prehistoric and 2 historic-period artifacts. Scattered across the site are 46 lithic flakes, 3 tested cobbles (1 chalcedony, 2 quartzite), 1 exhausted chert core, and 1 granitic mano. Two isolated cans, one soluble coffee can and one rectangular oil can (puncture opened) were also noted. One concentration of 27 prehistoric artifacts is present at the southern end of the site: it measures 15 m from east to west by 35 m from north to south. This concentration consists of approximately 25 flakes, 1 quartzite hammerstone, and 1 possible quartz crystal biface fragment. Both within the concentration and across the site in general, lithic flakes are primarily interior and cortical flakes of a broad range of materials including basalt, chert, chalcedony, quartzite, quartz crystal, and jasper. No evidence of a subsurface deposit was noted, but the actual depth of the site has not been determined.

The more particular physical context for site CA-Riv-9216, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be within the lake deposits of the Ql unit between the 377-footshoreline and the 370–373-foot shoreline (see “Present Process Geomorphology” and “Results of Geoarchaeological Investigations” subsections, above). The possibility of buried cultural resources within the lake deposits is expected to be moderate. However, the depth of these deposits is undetermined. This site is also located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash and in correspondingly poorer preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Nonetheless, subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant suggest no temporal association or functional interpretation for the site. However, the presence of ground stone at the site may indicate that it dates to between the Late Archaic (8000 to 6000 cal BC) and the Late Prehistoric (1100 cal BC to Contact) periods. Further, a high density lithic concentration suggests that stone tool production and/or maintenance took place in this location. The broad mix of activities taking place at this site, including food preparation and tool production and/or maintenance, suggests that it may have functioned as a temporary camp.

The archaeologists for the applicant recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The rationale may be tied to the sparse character of the surface assemblage and the

apparent absence of materials that would facilitate the placement of the deposit more specifically in time, indicating that the site does not have the potential to yield information important to prehistory. Without primary field data on the presence of a subsurface component for the site, staff cannot evaluate the site sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to prehistory. Staff therefore recommends that site CA-Riv-9216 (P33-17785) be assumed eligible for listing in the CRHR under Criterion 4, for the purpose of the present analysis.

CA-Riv-9217 (P33-17786)

This site is an oblong prehistoric archaeological deposit approximately 971 square m (0.3 acres) in area. In contrast to other sites in the proposed site footprint, its long axis runs from east to west rather than from north to south. It is located near the center of the southeastern portion of the site footprint, approximately 40 m south of CA-Riv-9212 (P33-17781). The present site surface is relatively flat and consists of sand and gravel. Small, dry seasonal drainages are present to the east on west of the site. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The surface component of the site measures approximately 58 m from east to west and 21 m from north to south. This sparse scatter of 3 prehistoric artifacts includes 1 black chert interior flake, 1 red quartzite cortical flake, and 1 brownware pottery sherd. No evidence of a subsurface deposit was noted, but the actual depth of the site has not been determined.

The more particular physical context for site CA-Riv-9217, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be located on the Holocene sand sheet of the Qsr unit and the Holocene alluvium of the Qal unit (see “Present Process Geomorphology” and “Results of Geoarchaeological Investigations” subsections, above). The possibility of buried cultural resources within these units is expected to be moderate within approximately 2 feet of the modern ground surface, in sediments stratigraphically above the Qoaf alluvium. The potential for artifacts within the Qoaf alluvial deposits, in consideration of the apparent Pleistocene age of those deposits, is considered slight. This site is also located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash and in correspondingly poorer preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Nonetheless, subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant suggest no temporal association or functional interpretation for the site. However, the presence of ceramics at the site may indicate that it dates to the Late Prehistoric (1100 cal BC to Contact) period. The archaeologists for the applicant recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The sparse character of the surface assemblage seems to indicate that the site does not have the potential to yield information important to prehistory. Staff therefore recommends that site CA-Riv-9217 (P33-17786) is not eligible for listing in the CRHR.

CA-Riv-9218 (P33-17787)

This site is an oblong prehistoric archaeological deposit approximately 161 m (0.04 acres) in area. It is located near the center of the southeastern portion of the site footprint, approximately 153 m east of CA-Riv-9219 (P33-17788). The present site surface is relatively flat and consists of sand and gravel alluvium. A small, dry seasonal drainage running from north to south cuts across the southern end of the site. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The surface component of the site measures approximately 13 m from east to west and 17 m from north to south. This sparse scatter of 3 prehistoric artifacts includes 1 chert interior flake, 1 cortical quartzite flake, and 1 chert bifacial scraper. No evidence of a subsurface deposit was noted, but the actual depth of the site has not been determined.

The more particular physical context for site CA-Riv-9218, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be located on the Holocene sand sheet of the Qsr unit and the Holocene alluvium of the Qal unit (see "Present Process Geomorphology" and "Results of Geoarchaeological Investigations" subsections, above). The possibility of buried cultural resources within these units is expected to be moderate within approximately 2 feet of the modern ground surface, in sediments stratigraphically above the Qoaf alluvium. The potential for artifacts within the Qoaf alluvial deposits, in consideration of the apparent Pleistocene age of those deposits, is considered slight. This site is also located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash and in correspondingly poorer preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Nonetheless, subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant suggest no temporal association or functional interpretation for the site. The archaeologists for the applicant recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The sparse character of the surface assemblage and the apparent absence of materials that would facilitate the placement of the deposit more specifically in time seem to indicate that the site does not have the potential to yield information important to prehistory. Staff therefore recommends that site CA-Riv-9218 (P33-17787) is not eligible for listing in the CRHR.

CA-Riv-9219 (P33-17788)

This site is an oblong prehistoric archaeological deposit approximately 404 square m (0.1 acres) in area. It is located near the center of the southeastern portion of the site footprint, approximately 153 m west of CA-Riv-9217 (P33-17786). A small, dry seasonal drainage running from north to south cuts across the site in an unspecified location. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The surface component of the site measures approximately 43 m from northeast to southwest and 17 m from northwest to southeast. This sparse scatter of 3 prehistoric chert artifacts includes 2 cortical flakes and 1 interior flake. No evidence of a subsurface deposit was noted, but the actual depth of the site has not been determined.

The more particular physical context for site CA-Riv-9219, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be located on the Holocene sand sheet of the Qsr unit and the Holocene alluvium of the Qal unit (see "Present Process Geomorphology" and "Results of Geoarchaeological Investigations" subsections, above). The possibility of buried cultural resources within these units is expected to be moderate within approximately 2 feet of the modern ground surface, in sediments stratigraphically above the Qoaf alluvium. The potential for artifacts within the Qoaf alluvial deposits, in consideration of the apparent Pleistocene age of those deposits, is considered slight. This site is also located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash and in correspondingly poorer preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Nonetheless, subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant suggest no temporal association or functional interpretation for the site. The archaeologists for the applicant recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The sparse character of the surface assemblage and the apparent absence of materials that would facilitate the placement of the deposit in time seem to indicate that the site does not have the potential to yield information important to prehistory. Staff therefore recommends that site CA-Riv-9219 (P33-17788) is not eligible for listing in the CRHR.

CA-Riv-9220 (P33-17789)

This site is an irregularly shaped prehistoric archaeological deposit approximately 38,162 square m (9.4 acres) in area. It is located along the southern boundary of the northwestern portion of the site footprint, approximately 171 m south of CA-Riv-9215 (P33-17784). A small, dry seasonal drainage running from north to south cuts across the site in an unspecified location. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface is composed of sand and gravel alluvium with subdued bar and swale topography. The surface component of the site measures approximately 221 m from east to west and 199 m from north to south. This scatter of 94 prehistoric artifacts includes 92 flakes, 1 brown chert projectile point (Cottonwood Leaf-shaped), and 1 quartz monzonite metate fragment. In general, lithic flakes are primarily interior and cortical flakes of chert and quartzite. No evidence of a subsurface deposit was noted, but the actual depth of the site has not been determined.

The more particular physical context for site CA-Riv-9220, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be within the lake deposits of the Ql unit between the 377-foot shoreline and the 370–373-foot shoreline (see "Present Process Geomorphology" and "Results of Geoarchaeological Investigations" subsections, above). The possibility of buried cultural resources within the lake deposits is expected to be moderate. However, the depth of these deposits is undetermined. This site is also located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash and in correspondingly poorer preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Nonetheless,

subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant suggest no temporal association or functional interpretation for the site. However, the presence of ground stone and a diagnostic projectile point suggest several possibilities for its age and function. The prehistoric use of milling equipment in the Mojave Desert has a broad temporal range, between the Late Archaic (8000 to 6000 cal BC) and the Late Prehistoric (1100 cal BC to Contact) periods. Several kinds of leaf shaped points have been used in the region over time, however. Cottonwood Leaf-shaped points tend to be smaller (approximately 3 cm in length) and some scholars associate them with the Late Cottonwood phase (AD 1840 to 1900) in the northwest Mojave Desert (Moratto 1984, p. 376). Other scholars associate leaf-shaped points primarily with the Pinto Complex of the Middle Holocene (7000 to 3000 cal BC) (Sutton et al. 2007, p. 236). These early artifacts tend to be larger (approximately 5 cm in length), like the chert projectile point found at CA-Riv-9220. The broad mix of activities taking place at this site, including food preparation and possibly tool production and/or maintenance, suggests that it may have functioned as a temporary camp.

The archaeologists for the applicant recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The rationale may be tied to the sparse character of the surface assemblage and the apparent absence of materials that would facilitate the placement of the deposit more specifically in time, indicating that the site does not have the potential to yield information important to prehistory. Without primary field data on the presence of a subsurface component for the site, staff cannot evaluate the site sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to prehistory. Staff therefore recommends that site CA-Riv-9220 (P33-17789) be assumed eligible for listing in the CRHR under Criterion 4, for the purpose of the present analysis.

CA-Riv-9221 (P33-17770)

This site is a trapezoidal shaped prehistoric archaeological deposit approximately 1,618 square m (0.4 acres) in area. It is located near the southwest corner of the southeastern portion of the site footprint, approximately 160 m west of CA-Riv-9215 (P33-17784). Numerous minor seasonal drainages run across the site. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface is composed of sand and gravel alluvium with subdued bar and swale topography. The surface component of the site measures approximately 33 m from east to west and 58 m from north to south. This sparse scatter of 8 prehistoric artifacts includes 5 chert cortical flakes, 1 chert pressure flake, 1 chert interior flake, and 1 cortical quartz crystal flake. No evidence of a subsurface deposit was noted, but the actual depth of the site has not been determined.

The more particular physical context for site CA-Riv-9221, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be within the lake deposits of the Ql unit between the377-foot shoreline and the 370–373-foot shoreline (see “Present Process Geomorphology” and “Results of Geoarchaeological

Investigations" subsections, above). The possibility of buried cultural resources within the lake deposits is expected to be moderate. However, the depth of these deposits is undetermined. This site is also located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash and in correspondingly poorer preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Nonetheless, subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant suggest no temporal association or functional interpretation for the site. The archaeologists for the applicant recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The sparse character of the surface assemblage and the apparent absence of materials that would facilitate the placement of the deposit in time seem to indicate that the site does not have the potential to yield information important to prehistory. Staff therefore recommends that site CA-Riv-9221 (P33-17790) is not eligible for listing in the CRHR.

CA-Riv-9222 (P33-17771)

This site is an oblong prehistoric archaeological deposit oriented east/west and with an area of approximately 1902 square m (0.5 acres). It is located in the northwestern corner of the southeastern portion of the site footprint approximately 722 m northeast of CA-Riv-9223 (P33-17772). Numerous minor seasonal drainages run across the site. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface is composed of sand and gravel alluvium with subdued bar and swale topography. The surface component of the site measures approximately 60 m from east to west and 39 m from north to south. This sparse scatter of 4 prehistoric artifacts includes 2 chert cortical flakes, 1 chert interior flake, and 1 quartz cortical flake. No evidence of a subsurface deposit was noted, but the actual depth of the site has not been determined.

The more particular physical context for site CA-Riv-9222, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be located on the Holocene sand sheet of the Qsr unit and the Holocene alluvium of the Qal unit (see "Present Process Geomorphology" and "Results of Geoarchaeological Investigations" subsections, above). The possibility of buried cultural resources within these units is expected to be moderate within approximately 2 feet of the modern ground surface, in sediments stratigraphically above the Qoaf alluvium. The potential for artifacts within the Qoaf alluvial deposits, in consideration of the apparent Pleistocene age of those deposits, is considered slight. This site is located in an area characterized by low-energy sheet wash which is conducive to the preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant suggest no temporal association or functional interpretation for the site. The archaeologists for the applicant recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this

recommendation. The sparse character of the surface assemblage and the apparent absence of materials that would facilitate the placement of the deposit in time seem to indicate that the site does not have the potential to yield information important to prehistory. Staff therefore recommends that site CA-Riv-9222 (P33-17791) is not eligible for listing in the CRHR.

CA-Riv-9223 (P33-17772)

This site is a triangular shaped prehistoric archaeological deposit 3,327 square m (0.8 acres) in area. It is located near the western border of the southeastern portion of the site footprint approximately 722 m southwest of CA-Riv-9222 (P33-17771). Numerous minor seasonal drainages run across the site and the immediate vicinity. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface is composed of sand and gravel alluvium with subdued bar and swale topography. The surface component of the site measures approximately 79 m from east to west and 75 m from north to south. This sparse scatter of 20 quartz prehistoric artifacts includes 13 interior flakes and 3 cortical flakes. No evidence of a subsurface deposit was noted, but the actual depth of the site has not been determined.

The more particular physical context for site CA-Riv-9223, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be located on the Holocene sand sheet of the Qsr unit and the Holocene alluvium of the Qal unit (see "Present Process Geomorphology" and "Results of Geoarchaeological Investigations" subsections, above). The possibility of buried cultural resources within these units is expected to be moderate within approximately 2 feet of the modern ground surface, in sediments stratigraphically above the Qoaf alluvium. The potential for artifacts within the Qoaf alluvial deposits, in consideration of the apparent Pleistocene age of those deposits, is considered slight. This site is located in an area characterized by low-energy sheet wash which is conducive to the preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant suggest that the site represents single flint-knapping episode. However, no temporal association is suggested for the site. The archaeologists for the applicant further recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The rationale may be tied to the sparse character of the surface assemblage and the apparent absence of materials that would facilitate the placement of the deposit in time, indicating that the site does not have the potential to yield information important to prehistory. Without primary field data on the presence of a subsurface component for the site, staff cannot evaluate the site sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to prehistory. Staff therefore recommends that site CA-Riv-9223 (P33-17792) be assumed eligible for listing in the CRHR under Criterion 4, for the purpose of the present analysis.

CA-Riv-9227 (P33-17796)

This site is a triangular shaped prehistoric archaeological deposit more than 3 acres (130,680 square feet) in area. It is located on the northeastern border of the proposed

GSEP linear facilities corridor approximately 1.5 miles directly north of I-10. Several small north/south trending drainages cut through the site in unspecified locations. Further information about the present site surface is unspecified. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The surface component of the site measures approximately 176 m from east to west and 111 m from north to south. This sparse scatter of 18 prehistoric artifacts includes 14 brownware pottery sherds (body, rim, and neck), 1 split chert cobble, 1 chert cortical flake, 1 chert biface thinning flake, and 1 marine shell fragment (species unknown). The marine shell was found in the northern portion of the site. It exhibited polish, but the source of the abrasion, either human or natural, was undetermined. No evidence of a subsurface deposit was noted, but the actual depth of the site has not been determined.

The more particular physical context for site CA-Riv-9227, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be within the lake deposits of the Ql unit between the 377-foot shoreline and the 370–373-foot shoreline (see "Present Process Geomorphology" and "Results of Geoarchaeological Investigations" subsections, above). The possibility of buried cultural resources within the lake deposits is expected to be moderate. However, the depth of these deposits is undetermined. This site is also located in an area noted for high-energy wave action which may have resulted in correspondingly poor preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Nonetheless, subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant suggest the presence of ceramics at the site may indicate that it dates to the Late Prehistoric (1100 cal BC to Contact) period. However, they provide no functional interpretation for the site. The presence of body, rim, and neck sherds suggests that these ceramic artifacts may represent a disturbed pot drop. Pot drops in non-random patterns have been associated with trails along main travel routes as well as trails that approach springs and tanks (Schaefer and Laylander 2007, p. 254). No evidence of a trail was noted near this site, but the close presence of prehistoric trails known to follow the I-10 corridor, McCoy Spring, and Ford Dry Lake itself, suggest that ceremonial pot drops may be present in the vicinity. The chert artifacts, suggest that that lithic tool manufacture or maintenance took place in this location. The temporal relationship between these two activities is uncertain, however.

The archaeologists for the applicant recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The rationale may be tied to the sparse character of the surface assemblage and the apparent absence of materials that would facilitate the placement of the deposit in time, indicating that the site does not have the potential to yield information important to prehistory. Without primary field data on the presence of a subsurface component for the site, staff cannot evaluate the site sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to prehistory. In addition, the presence of a pot drop suggests that this site may be a contributor to the PTNCL. Staff therefore recommends that site CA-Riv-9227 (P33-17796) be assumed eligible for listing in the NRHP under Criterion D and for the CRHR under Criterion 4, for the purpose of the present analysis.

CA-Riv-9249 (P33-18003)

This is an oblong prehistoric artifact scatter measuring 2,347 square m (0.96 acre) in area. It is located along the proposed GSEP linear corridor. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface consists of silty fine to very coarse sand with small to medium size dense and massive gravels. The dimensions of the surface component of the site provided on the site form were inaccurate. This site consists of a sparse scatter of 21 prehistoric artifacts and 3 historic/modern artifacts. The prehistoric component consists of 20 granitic-tempered brownware sherds and 1 piece of debitage. These sherds appear to be part of a single broken ceramic vessel, or pot drop. The historic-period component consists of 1 modern airplane part, 1 metal pocket watch face, and 1 can. None of these artifacts appear to be related to each other. The pocket watch face and the can may be historic-period artifacts, sufficient information about these artifacts was not provided to determine their age. No evidence of a subsurface deposit was noted, but the actual depth of the site has not been determined.

The more particular physical context for site CA-Riv-9249H, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be within the lake deposits of the Ql unit near the 370-to–373 foot shoreline (see “Present Process Geomorphology” and “Results of Geoarchaeological Investigations” subsections, above). The possibility of buried cultural resources within the lake deposits is expected to be moderate. However, the depth of these deposits is undetermined. This site is located in an area characterized by low-energy sheet wash which is conducive to the preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant suggest the presence of ceramics at the site may indicate that it dates to the Late Prehistoric (1100 cal BC to Contact) period. However, they provide no functional interpretation for the site. Staff notes that pot drops in non-random patterns have been associated with trails along main travel routes as well as trails that approach springs and tanks (Schaefer and Laylander 2007, p. 254). No evidence of a trail was noted near this site, but the close presence of prehistoric trails known to follow the I-10 corridor, McCoy Spring, and Ford Dry Lake itself, suggest that ceremonial pot drops may be present in the vicinity. These patterns are discussed in more detail, below, under “Summary of NRHP- and CRHR-Eligible Cultural Resources for the Genesis Solar Energy Project.”

The archaeologists for the applicant recommend that this site be found ineligible for listing in the NRHP. They argue that the sparse character of the surface assemblage and the apparent absence of materials that would facilitate the placement of the deposit in time, suggests that the site does not have the potential to yield information important to prehistory. Without primary field data on the presence of a subsurface component for the site, staff cannot evaluate the site sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to prehistory. In addition, the presence of a pot drop suggests that this site may be a contributor to the PTNCL. Staff therefore recommends that site CA-Riv-9249 (P33-18003) be assumed eligible for

listing in the NRHP under Criterion D and for the CRHR under Criterion 4, for the purpose of the present analysis.

CA-Riv-9255 (P33-18009)

This site is an irregular shaped prehistoric archaeological deposit 1.73 acres (7,001 square feet) in area. It is located along the proposed GSEP linear facilities corridor approximately 1 mile directly north of I-10. Further information about the present site surface is unspecified. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The surface component of the site measures approximately 75 m from east to west and 151 m from north to south. The site consists of a sparse scatter of more than 40 prehistoric artifacts and a single artifact concentration. Concentration 1 consists of 5 to 10 granitic-tempered brownware sherds that appear to be partially buried. Several of the sherds are vertical and are aligned in an arc, suggesting that a whole or partially whole vessel was left here. Other ceramics at the site include 4 brownware sherds and 3 redware sherds. The lithics tools present include 1 quartz biface fragment and 1 granitic core. Other lithics include 20 pieces of debitage primarily of black chert but also quartzite, chalcedony, quartz crystal, and jasper. Also present was 1 quartzite metate, 1 quartzite hammerstone, 1 split cobble, and 3 pieces of FAR. The presence of a subsurface deposit was noted, but the actual depth of the site has not been determined.

The more particular physical context for site CA-Riv-9255, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be within the lake deposits of the Ql unit near the 370-to–373 foot shoreline (see “Present Process Geomorphology” and “Results of Geoarchaeological Investigations” subsections, above). The possibility of buried cultural resources within the lake deposits is expected to be moderate. However, the depth of these deposits is undetermined. This site is located in an area characterized by low-energy sheet wash which is conducive to the preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. The partially buried brownware vessel suggests that additional subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant suggest the presence of ceramics at the site may indicate that it dates to the Late Prehistoric (1100 cal BC to Contact) period. However, they provide no functional interpretation for the site. Staff notes that pot drops in non-random patterns have been associated with trails along main travel routes as well as trails that approach springs and tanks (Schaefer and Laylander 2007, p. 254). No evidence of a trail was noted near this site, but the close presence of prehistoric trails known to follow the I-10 corridor, McCoy Spring, and Ford Dry Lake itself, suggest that ceremonial pot drops may be present in the vicinity. These patterns are discussed in more detail below, under Summary of NRHP- and CRHR-Eligible Cultural Resources for the Genesis Solar Energy Project.”

Tetra Tech recommends that this site be found eligible for listing in the NRHP under Criterion D. They note that the artifacts at the site appear to have well preserved spatial relationships and there appears to be evidence of a subsurface deposit. Without primary field data on the presence of a subsurface component for the site, staff cannot evaluate

the site sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to prehistory. In addition, the presence of a pot drop suggests that this site may be a contributor to the PTNCL. Staff therefore recommends that site CA-Riv-9255 (P33-18009) be assumed eligible for listing in the NRHP under Criterion D and for the CRHR under Criterion 4, for the purpose of the present analysis.

CA-Riv-9256 (P33-18010)

This site is an irregularly shaped prehistoric archaeological deposit with an area of approximately 1,173 square m (.29 acres). It is located along the GSEP linear corridor. An unnamed large dry wash and several northeast/southwest trending minor seasonal washes cross site in an unspecified locations. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface is composed of sand and gravel alluvium with subdued bar and swale topography. The surface component of the site measures approximately 60 m from northeast to southwest and 32 m from southeast to northwest. This sparse scatter of 7 prehistoric artifacts includes 6 cortical flakes and a quartz crystal biface fragment. Debitage material types include chert, quartzite, chalcedony, and jasper. No evidence of a subsurface deposit was noted, but the actual depth of the site has not been determined.

The more particular physical context for site CA-Riv-9256, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be within the lake deposits of the Ql unit between the 377-footshoreline and the 370–373-foot shoreline (see “Present Process Geomorphology” and “Results of Geoarchaeological Investigations” subsections, above). The possibility of buried cultural resources within the lake deposits is expected to be moderate. However, the depth of these deposits is undetermined. This site is also located in an area noted for low-energy sheet wash which may have resulted in correspondingly good preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant suggest no temporal association for the site, but do suggest that it may have served as a short-term, expedient lithic production site. The archaeologists for the applicant recommend that this site be found ineligible for listing in the NRHP. The sparse character of the surface assemblage and the apparent absence of materials that would facilitate the placement of the deposit in time seem to indicate that the site does not have the potential to yield information important to prehistory. Staff therefore recommends that site CA-Riv-9256 (P33-18010) is not eligible for listing in the CRHR.

CA-Riv-9257 (P33-18011)

This site is an oblong prehistoric archaeological deposit with an area of approximately 242 square m (0.06 acres). It is located along the GSEP linear corridor. Several northeast/southwest trending minor seasonal washes cross site in an unspecified locations. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface is composed of sand and gravel alluvium surrounded by low lying coppice dunes. The surface component of the site measures approximately 60 m from northeast to southwest and 32 m from southeast to northwest. This sparse

scatter of 4 prehistoric artifacts includes 2 quartzite cortical flakes, 1 black chert flake fragment, and 1 biface thinning flake of unspecified material. No evidence of a subsurface deposit was noted, but the actual depth of the site has not been determined.

The more particular physical context for site CA-Riv-9257, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be within the lake deposits of the Ql unit between the 377-foot shoreline and the 370-to–373 foot shoreline (see "Present Process Geomorphology" and "Results of Geoarchaeological Investigations" subsections, above). The possibility of buried cultural resources within the lake deposits is expected to be moderate. However, the depth of these deposits is undetermined. This site is also located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash and in correspondingly poorer preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Nonetheless, subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The archaeologists for the applicant suggest no temporal association for the site, but do suggest that it may have served as a short-term, expedient lithic production site. Tetra Tech further recommends that this site be found ineligible for listing in the NRHP. The sparse character of the surface assemblage and the apparent absence of materials that would facilitate the placement of the deposit in time seem to indicate that the site does not have the potential to yield information important to prehistory. Staff therefore recommends that site CA-Riv-9257 (P33-18011) is not eligible for listing in the CRHR.

Historical Archaeological Sites Evaluations and Descriptions

Staff evaluated 13 historic-period archaeological resources, and 1 resource of unknown age. The unknown resource is likely to be historic. Staff recommends that all 14 resources should be assumed eligible for listing in the CRHR. All evaluated resources are also potential contributors to the DTCCL.

P33-13598

This site is clearly within the GSEP linear corridor however Tetra Tech did not provide an updated site record. The following discussion is based on the report and site forms by Mooney and Associates (Eckhardt et al. 2004). It is unclear if a trinomial has been assigned to this site. Maps provided by CHRIS do not clarify this issue. The site may have been destroyed by transmission line construction in the area.

This oblong historic-period refuse deposit approximately 170 square m (0.04 acres) in area. It is located at the southern end of the GSEP linear corridor. An existing Southern California Edison transmission line crosses the center of the site. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface is composed of sand and gravel alluvium. Further details about the site surface are unspecified. Based on the site map, the surface component of the site measures approximately 10 m from east to west and 17 m from north to south. This site consists of a sparse scatter of 3 small can clusters and 8 food and beverage cans and a double-edge razor blade. The can assemblage is reported to include 1 soluble coffee tin, 1 evaporated milk can, several cylindrical key-wind meat tins, and sanitary vegetable and

beverage containers. The contents of the individual can clusters are unspecified. No evidence of a subsurface deposit was noted, but the actual depth of the site has not been determined.

Artifact types and chronological indicators suggest that the refuse scatter is military in type, dating from the 1940s suggesting that this site may be a contributing element to the DTCCL. However, Mooney and Associates note that the artifacts at the site have been rearranged by erosion, and therefore offer poor potential to yield information important to history. Without further primary field data on the integrity of the deposit, possible use of these artifacts during World War II maneuvers, and potential evidence of characteristic military-style trash disposal practices (Bischoff 2000), staff cannot evaluate the site sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to history. Staff therefore recommends that site P33-13598 be assumed eligible for listing in the NRHP under Criterion D and for the CRHR under Criterion 4, for the purpose of the present analysis.

CA-Riv-0259 (P33-13656)

This site is clearly within the GSEP linear corridor, however Tetra Tech did not provide an updated site record. The following discussion is based on Mooney and Associates report and site record (Eckhardt et al. 2004). This site was originally recorded in 1965 by Gessler as a prehistoric habitation site containing at least 5 housepits. Eckhardt and his colleagues provide a convincing argument that these previous researchers misidentified the site type.

This round historic-period refuse deposit and feature cluster is approximately 4356 square m (1.08 acres) in area. It is located at the eastern end of the GSEP linear corridor and northeast of the Wiley's Well Road Rest Area. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface is composed of sand and gravel alluvium. Further details about the site surface are unspecified. Based on the site record, the surface component of the site measures approximately 66 m from east to west and 66 m from north to south. This site consists of at least 5 low- bermed earthen features that appear to be WW II era foxholes, and a widely spread light-density artifact scatter. The artifacts present at the site in 2004 include several worn and discarded tank track treads made of vulcanized rubber, a military field communication-wire spool, several types of tin cans, and a "Melo-Paya" glass bottle. No evidence of a subsurface deposit was noted, but the actual depth of the site has not been determined.

Feature types, artifact types, and chronological indicators suggest that the site is military in origin, dating from the 1940s. As such, this site may be a contributing element to the DTCCL. Without further primary field data on the integrity of the deposit, possible use of these artifacts during World War II maneuvers, and potential evidence of characteristic military-style trash disposal practices (Bischoff 2000), staff cannot evaluate the site sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to history. Staff therefore recommends that site CA-Riv-0259 (P33-13656) be assumed eligible for listing in the NRHP under Criterion D and for the CRHR under Criterion 4, for the purpose of the present analysis.

CA-Riv-9063H (P33-17447)

This site is an oblong historic-period refuse deposit approximately 4,950 square m (1.22 acres) in area. It is located along the GSEP linear corridor, south of CA-Riv-9203H. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface is composed of a mosaic of undulating desert floor alluvium and loosely consolidated desert pavement. Further details about the site surface are unspecified. The surface component of the site measures approximately 50 m from east to west and 99 m from north to south. This site consists of a sparse scatter of more than 15 metal artifacts. The assemblage is reported to include over 10 food cans with key-wind removal, 1 condensed milk can, 1 portion of tea can,1 can opener,1 US military issue spoon, and 1 pair of heavily rusted steel pliers.

In addition to the field investigation, the archaeologists for the applicant also examined historic maps, BLM records, and other historic documents. They found no evidence of any historic-period dwellings and/or structures on or within several miles of CA-Riv-9063H. The specific documentary sources examined for this site were unspecified. Artifact types and chronological indicators suggest that the refuse scatter is military in origin, dating from the 1940s. As such, this site may be a contributing element to the DTCCL. The archaeologists for the applicant recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. Without further primary field data on the integrity of the deposit, possible use of these artifacts during World War II maneuvers, and potential evidence of characteristic military-style trash disposal practices (Bischoff 2000), staff cannot evaluate the site sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to history. Staff therefore recommends that site CA-Riv-9063H (P33-17447) be assumed eligible for listing in the NRHP under Criterion D and the for CRHR under Criterion 4, for the purpose of the present analysis.

CA-Riv-9203H (P33-17772)

This site is an oblong historic-period refuse deposit approximately 21,084 square m (5.2 acres) in area. It is located near the southeast corner of the southeastern section of the proposed site footprint, within and adjacent to a northeast/southwest trending seasonal dry wash. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface is composed of sand and gravel alluvium. Further details about the site surface are unspecified. The surface component of the site measures approximately 100 m from east to west and 370 m from north to south. This site consists of a sparse scatter of more than 84 food and beverage cans, can fragments, glass bottles, and plastic. The can assemblage is reported to include 3 hole-in-top cans (knife- or ice-pick-opened), 3 church-key-opened beverage cans, 50 14.5-ounce food cans (round, key-opened or knife-cut-opened), 2 aluminum pull-tab cans (ring pull tab, c. 1965–1975), 3 15-ounce food cans (opened with a rotary can opener), 1 36-ounce can, and more than 20 can fragments. The glass assemblage is reported to include 1 clear glass condiment bottle with an “I within an O” Owens-Illinois (c. 1954–present) maker’s mark embossed on the base. Finally, 1 yellow plastic tape dispenser was also noted.

In addition to the field investigation, the archaeologists for the applicant also examined historic maps, BLM records, and other historic documents. They found no evidence of

any historic-period dwellings and/or structures on or within several miles of CA-Riv-9203H (P33-17772). The specific documentary sources examined for this site were unspecified. Artifact types and chronological indicators suggest that the refuse scatter is domestic in type, most likely from a single dumping episode, and dating from the mid-1950s to the mid-1970s. This trash deposit could be the result of recent historic activities such as sheep and cattle ranching, “Desert Strike” military training (1960s), and off-highway-vehicle recreational use. The archaeologists for the applicant propose that the source of trash was not associated with a specific homestead, individual, or group but do not discuss which aspects of the site lead them to this conclusion.

The archaeologists for the applicant recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The resolution of the documentation for the deposit makes it difficult to assess the actual date range that it represents, and therefore its potential association with important historic themes. The information present suggests that this site consists of a single episode of domestic trash disposal to sometime after 1950. However, the details provided by the archaeologists for the applicant do not rule out the possibility that this is a dual component site which includes a deposit associated with the DTCCL. Without further primary field data on the integrity of the deposit, possible use of these artifacts during World War II maneuvers, and potential evidence of characteristic military-style trash disposal practices (Bischoff 2000), staff cannot evaluate the site sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to history. Staff therefore recommends that site CA-Riv-9203H (P33-17772) be assumed eligible for listing in the NRHP under Criterion D and for the CRHR under Criterion 4, for the purpose of the present analysis.

CA-Riv-9204H (P33-17773)

This site is an oblong historic-period refuse deposit approximately 3,156 square m (0.8 acres) in area. It is located near the southern boundary of the southeastern section of the proposed site footprint. Seasonal drainages were noted to the east and west of the site at unspecified distances. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface is composed of sand and gravel alluvium. Further details about the site surface are unspecified. The surface component of the site measures approximately 97 m east to west and 30 m north to south. This site consists of a sparse can scatter and two artifact concentrations approximately 88 m apart. Concentration 1 is located within the eastern portion of the site and measures approximately 20 m by 20 m. It consists of 8 hole-in-top cans with their tops cut off and 1 soluble coffee can. Concentration 2 is within the western portion of the site, 88 m west of Concentration 1. It measures approximately 12 m by 10 m and consists of 7 hole-in-top cans with the tops cut off and 1 machine-made, external-thread-lipped, clear glass jar, with “14 over 3824” Knox Glass Bottle Co. (c. 1932–1953) maker’s mark embossed on bottom. The remainder of the site includes a light scatter of 7 hole-in-top cans. In total, 24 historic-period artifacts were identified at the site. The site appears to be primarily a surface deposit with some partial subsurface artifacts, but the actual depth of the site has not been determined.

In additional to the field investigation, the archaeologists for the applicant also examined historic maps, BLM records, and other historic documents. They found no evidence of

any historic-period dwellings and/or structures on or within several miles of CA-Riv-9204H (P33-17773). The specific documentary sources examined for this site were unspecified. Artifact types and chronological indicators suggest that the refuse scatter is domestic in type, most likely from a single dumping episode, and dating from the mid 1930s to early 1950s. Additionally, the artifacts appear to represent common domestic food and/or military issue rations (e.g., the soluble coffee can).

The archaeologists for the applicant recommend that this site be found ineligible for listing in the NRHP, arguing that these items are unlikely to yield information important to the historic development of the region. They further point out that the artifacts at the site have been rearranged by erosion, and therefore do not offer the potential to yield information important to history. The resolution of the documentation for the deposit makes it difficult to assess the actual date range that it represents, and therefore its potential association with important historic themes. However, the information that is present suggests that this site may be a contributing element to the DTCCL. Without further primary field data on the integrity of the deposit, possible use of these artifacts during World War II maneuvers, and potential evidence of characteristic military-style trash disposal practices (Bischoff 2000), staff cannot evaluate the site sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to history. Staff therefore recommends that site CA-Riv-9204H (P33-17773) be assumed eligible for listing in the NRHP under Criterion D and for the CRHR under Criterion 4, for the purpose of the present analysis.

CA-Riv-9211H (P33-17780)

This site is a triangular-shaped historic-period refuse deposit approximately (808 square m (0.2 acres) in area. It is located near the center of the southeastern section of the proposed site footprint. Several seasonal drainages were noted to pass through the site in unspecified locations. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface is composed of sand and gravel alluvium. Further details about the site surface are unspecified. The surface component of the site measures approximately 37 m from east to west and 37 m from north to south. This site consists of a sparse scatter of 25 cans, bottles, and related fragments. The can assemblage includes 1 aluminum beverage can (pull tab, c. 1962–1978), 3 round key-opened food cans (key winder inscribed “ESTAB. 95 9/PACKED”), 1 large food can (46 ounces), and 1 small food can (12 ounces). The glass assemblage includes 1 clear glass “Coca Cola” bottle body and base fragment with an embossed base (Owens-Illinois c.1929 to approximately 1959), 1 brown glass bottle embossed base (Owens-Illinois c. 1929 to approximately 1959), and 15 brown and clear glass bottle fragments. In addition, 1 crown bottle cap and 1 1934 American “wheat” penny were also noted. The site appears to be primarily a surface deposit, but the actual depth of the site has not been determined.

In addition to the field investigation, the archaeologists for the applicant also examined historic maps, BLM records, and other historic documents. They found no evidence of any historic-period dwellings and/or structures on or within several miles of CA-Riv-9211H (P33-17780). The archaeologists for the applicant could not associate the source of trash with a specific homestead and/or individual or group. The specific documentary sources examined for this site were unspecified. Artifact types and chronological

indicators suggest that the refuse scatter is domestic in type, dating from the mid-1930s to the mid-1970s. Refuse could be associated with World War II training activities, and/or the combination of recent historic activities such as sheep and cattle ranching, “Desert Strike” military training (1960s), and off-highway-vehicle recreational use.

The archaeologists for the applicant recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The resolution of the documentation for the deposit makes it difficult to assess the actual date range that it represents, and therefore its potential association with important historic themes. However, the information that is present suggests that this site may be a contributing element to the DTCCL (Historic District). Without further primary field data on the integrity of the deposit, possible use of these artifacts during World War II maneuvers, and potential evidence of characteristic military-style trash disposal practices (Bischoff 2000), staff cannot evaluate the site sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to history. Staff therefore recommends that site CA-Riv-9211H (P33-17780) be assumed eligible for listing in the NRHP under Criterion D and for the CRHR under Criterion 4, for the purpose of the present analysis.

CA-Riv-9213H (P33-17782)

This site is an oblong historic-period refuse deposit approximately 7,487 square m (1.9 acres) in area. It is located on the eastern boundary of the southeastern section of the proposed site footprint. A north-south trending seasonal drainage passes through the western half of the site. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface is described as sand and gravel alluvium. Further details about the site surface are unspecified. The surface component of the site measures approximately 117 m from east to west and 90 m from north to south. This site consists of a sparse scatter of 58 metal artifacts including 40 round, key-opened food cans (16 ounce), 10 condensed milk cans (14.5 oz, church-key-opened), 4 rectangular food cans, 2 soluble coffee cans, 1 one-gallon-size gas can, and 1 key winder inscribed “ESTAB. 95 9/PACKED.” The site appears to be primarily a surface deposit with some partially buried artifacts, but the actual depth of the site has not been determined.

In addition to the field investigation, the archaeologists for the applicant also examined historic maps, BLM records, and other historic documents. They found no evidence of any historic-period dwellings and/or structures on or within several miles of CA-Riv-9213H (P33-17782). The specific documentary sources examined for this site were unspecified. Artifact types and chronological indicators suggest that the refuse scatter is domestic in type, probably from a single dumping episode. In addition, the artifacts appear to represent common domestic food and/or military issue rations (e.g. soluble coffee can, key-wind-opened cans). The date range for these artifacts and the kind of activities that might have resulted in their disposal, are unspecified.

The archaeologists for the applicant recommend that this site be found ineligible for listing in the NRHP, arguing that these items are unlikely to yield information important to the historic development of the region. They further point out that the artifacts at the site have been rearranged by erosion and therefore do not appear to be associated with

events that made a significant contribution to our history, or associated with the life of a significant person, and do not exhibit characteristics that would yield important information to history. The resolution of the documentation for the deposit makes it difficult to assess the actual date range that it represents and therefore its potential association with important historic themes. However, the information that is present suggests that this site may be a contributing element to the DTCCL (Historic District). Without further primary field data on the integrity of the deposit, possible use of these artifacts during World War II maneuvers, and potential evidence of characteristic military-style trash disposal practices (Bischoff 2000), staff cannot evaluate the site sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to history. Staff therefore recommends that site CA-Riv-9213H (P33-17782) be assumed eligible for listing in the NRHP under Criterion D and for the CRHR under Criterion 4, for the purpose of the present analysis.

CA-Riv-9214H (P33-17783)

This site is an irregularly shaped historic-period refuse deposit approximately 2,832 square m (0.7 acres) in area. It is located in the center of the northwestern section of the proposed site footprint. Several small seasonal drainages pass through the site in unspecified locations. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface is described as sand and gravel alluvium alternating with hardpan. Further details about the site surface are unspecified. The surface component of the site measures approximately 49 m from east to west and 69 m from north to south. This site consists of a sparse scatter of 34 metal and glass artifacts. The metal assemblage includes 15 hole in-top cans (12 ounce), 15 24-ounce cans (opened with a rotary can opener), 1 pocket tobacco can, 1 metal chain link/hook, and 1 cylindrical container top etched “The J.B. Williams Co./Eft. 1850/Glastonbury Conn. U.S.A.” (possible shaving stick or talcum powder, c. 1853–1956). The glass assemblage consists of a single broken brown glass jar embossed “Vaseline/ Cheesebrough/ New York.” The site appears to be primarily a surface deposit with some partially buried artifacts, but the actual depth of the site has not been determined.

In addition to the field investigation, the archaeologists for the applicant also examined historic maps, BLM records, and other historic documents. They found no evidence of any historic-period dwellings and/or structures on or within several miles of CA-Riv-9214H (P33-17783). The specific documentary sources examined for this site were unspecified. Artifact types and chronological indicators suggest that the refuse scatter is domestic in type, probably from a single dumping episode. In addition, the artifacts appear to represent common domestic food and/or military issue rations. The date range for these artifacts and the kind of activities that might have resulted in their disposal, are unspecified.

The archaeologists for the applicant recommend that this site be found ineligible for listing in the NRHP, arguing that these items are unlikely to yield information important to the historic development of the region. They further point out that the artifacts at the site have been rearranged by erosion, and therefore do not appear to be associated with events that made a significant contribution to our history, or associated with the life of a significant person, and do not exhibit characteristics that would yield important information to history. The resolution of the documentation for the deposit makes it

difficult to assess the actual date range that it represents, and therefore its potential association with important historic themes. However, the information that is present suggests that this site may be a contributing element to the DTCCL (Historic District). Without further primary field data on the integrity of the deposit, possible use of these artifacts during World War II maneuvers, and potential evidence of characteristic military-style trash disposal practices (Bischoff 2000), staff cannot evaluate the site sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to history. Staff therefore recommends that site CA-Riv-9214H (P33-17783) be assumed eligible for listing in the NRHP under Criterion D and for the CRHR under Criterion 4, for the purpose of the present analysis.

CA-Riv-9228H (P33-17797)

This site is a roughly circular historic-period refuse deposit approximately 2,827 square m (0.06 acres) in area. It is located on the eastern boundary of the proposed linear facilities corridor approximately 1.5 miles directly north of I-10. A north-south trending seasonal drainage is located in an unspecified location within the site. The predominant vegetation on the site appears to be Mojave creosote bush scrub. No details about the present site surface were provided. The surface component of the site measures approximately 64 m from east to west and 60 m from north to south. This site consists of a sparse scatter of 21 metal and glass artifacts. The metal assemblage at the site includes 6 sanitary cans (crimp seam), 1 hole-in-top sanitary can, 1 rectangular can (possibly for olive oil, with crimp seam, base embossed “URUGUAY”), 1 key-wind-opened can (embossed “ESTAB.315/PACKED/2”), 1 painted can (crimp seam, body painted with “NES”, snap/friction lid imprinted “Keep Tightly Closed”), and 1 GEM BLADE razor blade (“PAT 1739280” c. 1929 and later). The glass assemblage includes 5 aqua Coca Cola bottle fragments (1 base embossed “SAN BERNARDINO CALIF” and “BOTTLE PAT. D 105529,” c. 1938–1951), and 5 or more clear glass bottle fragments including a base fragment with an “S”-in-star marker’s mark (Southern Glass Company, Vernon, CA; c. 1916–1931). The site appears to be primarily a surface deposit, but the actual depth of the site has not been determined.

The archaeologists for the applicant do not propose a date range for this deposit or associated activities that might have resulted in its placement within the proposed site footprint. The archaeologists for the applicant further recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The resolution of the documentation for the deposit makes it difficult to assess the actual date range that it represents, and therefore its potential association with important historic themes. Staff notes that these artifacts date to within the period of significance for the DTCCL (Historic District), 1942 to 1944, suggesting that this site may be a contributing element to the district. Without further primary field data on the integrity of the deposit, possible use of these artifacts during World War II maneuvers, and potential evidence of characteristic military-style trash disposal practices (Bischoff 2000), staff cannot evaluate the site sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to history. Staff therefore recommends that site CA-Riv-9228H (P33-17797) be assumed eligible for listing in the NRHP under Criterion D and for the CRHR under Criterion 4, for the purpose of the present analysis.

CA-Riv-9245H (P33-17999)

This site is an oblong historic-period refuse deposit approximately 13,500 square m (3.34 acres) in area. It is located along the GSEP linear corridor, north of the Blythe-Eagle Mountain Transmission Line. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface is composed of sand and gravel alluvium, cut by a north/south trending seasonal wash in an unspecified location. Further details about the site surface are unspecified. The surface component of the site measures approximately 125 m from northwest to southeast and 108 m from southwest to northeast. This site consists of a sparse scatter of 14 metal artifacts. The assemblage is reported to include 6 10-12 oz. crimped seam sanitary food cans (2 knife opened, 4 can opener), 3 ration cans, 1 key open can (smashed), 1 quart motor oil crimped seam can ("New Texaco Motor Oil" c. 1937), 1 metal thermos ("Aladdin's Economy Thermos Bottle"), and 1 kerosene lantern/flare ("Dietz All Weather" and "PAT JUN 16-31 and JUN 16-32"). The site appears to be primarily a surface deposit, but the actual depth of the site has not been determined.

In addition to the field investigation, the archaeologists for the applicant also examined historic maps, BLM records, and other historic documents. They found no evidence of any historic-period dwellings and/or structures on or within several miles of CA-Riv-9245H (P33-17999).The specific documentary sources examined for this site were unspecified. Tetra Tech suggests that the artifacts at this site are associated with the construction of he Blythe-Eagle Mountain Transmission Line (c. late 1950s) or of the I-10 (c. late 1960s completed by 1972) during the late 1950s or early 1960s. The archaeologists for the applicant recommend that this site be found ineligible for listing in the NRHP, possibly related to the age of the deposit.

The resolution of the documentation for the deposit makes it difficult for staff to assess the actual date range that it represents, and therefore its potential association with important historic themes. The information present suggests that this site consists of one or more episodes of trash disposal dating to sometime after 1937. The site may well be associated with the construction of the Blythe-Eagle Mountain Transmission Line or the I-10. However, the details provided by the archaeologists for the applicant do not rule out the possibility that this is a multi-component site which includes a deposit associated with the DTCCL. Without further primary field data on the integrity of the deposit, possible use of these artifacts during World War II maneuvers, and potential evidence of characteristic military-style trash disposal practices (Bischoff 2000), staff cannot evaluate the site sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to history. Staff therefore recommends that site CA-Riv-9245H (P33-17999) be assumed eligible for listing in the NRHP under Criterion D and for the CRHR under Criterion 4 and the CRHR, for the purpose of the present analysis.

CA-Riv-9248H (P33-18002)

This site is a crescent shaped historic-period refuse deposit approximately 6,879 square m (1.7 acres) in area. It is located along the GSEP linear corridor. No vegetation was noted on site except for small patches of low annual grasses. The site surface is characterized by low-energy sheet was and minor seasonal washes trending from northeast to southwest. The site has been disturbed by modern off-road vehicles and

the installation of a modern metal post and a 3-foot long piece of wood lath. Further details about the site surface are unspecified. The surface component of the site measures approximately 252 m from east to west and 353 m from north to south. This site consists of a sparse scatter of 31 artifacts, mainly metal but also including glass and plastic. The can assemblage is reported to include 1 coffee can (12 oz, external thread lid, machine produced, “NESCAFE” and “USA No.1154” c. 1940s-1960s), 4 sanitary cans (12 oz., machine crimped, punctured open, beverage), 3 cans (16 oz, food, machine crimped, round cut can opener), 1 can (14.5-15 oz. oval, e.g. sardines, pull tab or key open),1 can (40oz, juice, punctured open), 4 cans (smashed, unknown type), 1 coffee can lid (“salt” etched on top), and 1 can lid (embossed “Keep Tightly Closed”). The gun related assemblage included 8 machine gun cartridges (.30 caliber, blank, M1909, “F A 38” and “F A 40”, c. 1938 and 1940) and 1 12-gauge shot gun shell base. Other metal artifacts include 1 piece of flat metal, 1 metal wire fragment, 1 automotive leaf spring, and 1 razor blade. Also present was 1 clear glass fragment and 1 green plastic fragment. The site appears to be primarily a surface deposit, but the actual depth of the site has not been determined.

In addition to the field investigation, the archaeologists for the applicant also examined historic maps, BLM records, and other historic documents. They found no evidence of any historic-period dwellings and/or structures on or within several miles of CA-Riv-9248H. The specific documentary sources examined for this site were unspecified. Artifact types and chronological indicators suggest that the refuse scatter is military in origin, dating from the 1940s. In particular, the bullet blanks suggest a military training exercise indicating that this site may be a contributing element to the DTCCL. The archaeologists for the applicant recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. Without further primary field data on the integrity of the deposit, possible use of these artifacts during World War II maneuvers, and potential evidence of characteristic military-style trash disposal practices (Bischoff 2000), staff cannot evaluate the site sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to history. Staff therefore recommends that site CA-Riv-9248H (P33-18002) be assumed eligible for listing in the NRHP under Criterion D and for the CRHR under Criterion 4 and the CRHR, for the purpose of the present analysis.

CA-Riv-9251H (P33-18005)

This site is a crescent shaped historic-period refuse deposit approximately 3,197 square m (0.24 acres) in area. It is located along the GSEP linear corridor. No vegetation was noted on site except for small patches of low annual grasses. The site surface is characterized by mixed alluvial and Aeolian deposits near a Ford Dry Lake shoreline. Minor seasonal washes trending from northeast to southwest cross the site in unspecified locations. The surface component of the site measures approximately 61 m from east to west and 28 m from north to south. This site consists of a sparse scatter of 8 metal artifacts and 1 chert flake. The metal assemblage is reported to include 2 machine gun cartridges (.30 caliber, blank, M1909, “F A 40”, c. 1940), 1 Nescafe coffee can (external thread lid, machine produced), 3 food cans (16 oz, smashed, can opener), 2 military ration cans (10-12 oz, key opened), 1 pocket knife, and 1 fragment of bailing wire. The site appears to be primarily a surface deposit, but the actual depth of the site has not been determined.

In addition to the field investigation, Tetra Tech also examined historic maps, BLM records, and other historic documents. They found no evidence of any historic-period dwellings and/or structures on or within several miles of CA-Riv-9251H (P33-18005). The specific documentary sources examined for this site were unspecified. Artifact types and chronological indicators suggest that the refuse scatter is military in origin, dating from the 1940s. In particular, the bullet blanks suggest a military training exercise indicating that this site may be a contributing element to the DTCCL. The archaeologists for the applicant recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. Without further primary field data on the integrity of the deposit, possible use of these artifacts during World War II maneuvers, and potential evidence of characteristic military-style trash disposal practices (Bischoff 2000), staff cannot evaluate the site sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to history. Staff therefore recommends that site CA-Riv-9251H (P33-18005) be assumed eligible for listing in the NRHP under Criterion D and for the CRHR under Criterion 4 and the CRHR, for the purpose of the present analysis.

CA-Riv-9254H (P33-18008)

This site is a triangular shaped historic-period refuse deposit approximately 2,347 square m (0.58 acres) in area. It is located along the GSEP linear corridor. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface is composed of sand and gravel alluvium, cut through the center by a northeast/southwest trending seasonal drainage. Recent off-road vehicle tracks (motorcycle or dirt bike) were noted within the site limits. The surface component of the site measures approximately 257 m from northeast to southwest and 179 m from southeast to northwest. This site consists of 20 metal artifacts and 1 clear glass fragment. Concentration 1 is located in the center of the site and measures 7.3 m by 32.3 m. It consists of 11 ration cans (machine crimped, key opened, 10 oz), 3 can lids, and 1 ration can (8-10 oz, machine crimped, key opened). The remaining artifacts form a light scatter across the site. These include 2 sanitary beverage cans (10-12 oz, emergency water, punctured), 3 food cans (8-10 oz, machine crimped, key open), and 1 clear glass fragment. The site appears to be primarily a surface deposit, but the actual depth of the site has not been determined.

In addition to the field investigation, Tetra Tech also examined historic maps, BLM records, and other historic documents. They found no evidence of any historic dwellings and/or structures on or within several miles of CA-Riv-9254H (P33-18008). The specific documentary sources examined for this site were unspecified. The archaeologists for the applicant do not propose a date range for this deposit or associated activities that might have resulted in its placement within the proposed GSEP linear corridor. The archaeologists for the applicant further recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The resolution of the documentation for the deposit makes it difficult to assess the actual date range that it represents, and therefore its potential association with important historic themes. However, this site may be a contributing element to the DTCCL. Without further primary field data on the integrity of the deposit, possible use of these artifacts during World War II maneuvers, and potential evidence of characteristic military-style trash disposal practices (Bischoff 2000), staff cannot evaluate the site

sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to history. Staff therefore recommends that site CA-Riv-9254H (P33-18008) be assumed eligible for listing in the NRHP under Criterion D and for the CRHR under Criterion 4 and the CRHR, for the purpose of the present analysis.

CA-Riv-9258H (P33-18012)

This site is a long, thin, historic-period refuse scatter 9,307 square m (2.3 acres) in area. It is located along the GSEP linear corridor south of I-10 and west of Wiley's Well Road. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface is composed of stable and active sand dunes, disturbed by off-road vehicle tracks, modern trash, a modern gas line, two roads, a cement marker, and a USGS Marker (Section 32/33). The surface component of the site measures 298 m from east to west and 107 m from north to south. It consists of approximately 150 historic-period artifacts in five concentrations, with a light scatter of artifacts surrounding them. The artifacts are primarily metal cans with some pieces of glass. The scatter appears to be primarily a surface deposit with occasional artifacts buried by active sand dunes.

Concentration 1 is located in the eastern portion of the site, east of the gas line. It measures 20.4 m by 9.4 m and consists of 11 metal cans. These artifacts include 3 soluble coffee cans (friction lid), 4 ration cans (10-12 oz, /crimped seams/key open), and 4 food cans (16 oz, crimped seams/food/round cut can opener opened). Concentration 2 is located in the eastern portion of the site, just west of the gas line. It measures 13.4 m by 7.6 m and consists of 8 metal cans. These artifacts include 7 ration cans (10-12 oz, /crimped seams/key open), and 1 food can (16 oz, crimped seams/cross cut opened). Concentration 3 is located in the western half of the site near the southern site boundary. It measures 15.2 m by 13.7 m and consists of approximately 48 artifacts. These artifacts include 30-40 food cans (32 oz, crimped seams/round cut can opener opened), 7 coffee cans (12 oz, external thread lid, machine produced, "NESCAFE" type c. 1940s-1960s), and 1 clear glass bottle neck and base fragment (jug, single finger hole neck with external thread lip and metal cap, base Maker's mark Owens Illinois Glass Company, c. 1929-1957). Concentration 4 is located in the western half of the site, immediately north of Concentration 3. It measures 17.1 m by 15.2 m and consists of 26 metal cans. These artifacts include 20 ration cans (10-12 oz, /sanitary/crimped seams/ punctured/beverage e.g. emergency water), 5 food cans (16 oz, crimped seams/round cut can opener opened), and1 soluble coffee can (friction lid). Concentration 5 is located in the western half of the site, northwest of Concentration 4. It measures 12.2 m by 9.1 m and consists of approximately 35 metal cans. These artifacts include 20-30 ration cans (10-12 oz, /crimped seams/key open), 3 soluble coffee cans (friction lid), 1 beverage can (12 oz, crimped seams/church key open), and 1 aluminum pull-top can.

These five concentrations are surrounded by a light scatter of 23 artifacts. These artifacts include 16 ration cans (12 oz, /sanitary/crimped seams/key opened), 3 ration cans (10-12 oz, /sanitary/crimped seams/punctured/beverage e.g. emergency water), 2 soluble coffee cans (friction lid), 2 other cans (14.5-15 oz., oval/machine crimped/key opened), 1 beverage can (46 oz./crimped seams/juice), and 1 machine gun cartridge (.30 mm caliber, blank, M1909, "F A 40", c. 1940).

In addition to the field investigation, Tetra Tech also examined historic maps, BLM records, and other historic documents. They found no evidence of any historic-period dwellings and/or structures on or within several miles of CA-Riv-9258H (P33-18012). The specific documentary sources examined for this site were unspecified. Artifact types and chronological indicators suggest that the refuse scatter is military in origin, dating from the 1940s. In particular, the bullet blanks suggest a military training exercise indicating that this site may be a contributing element to the DTCCL. The site may also be associated with other construction projects such as Operation Desert Strike (c. 1964) and the construction of the I-10 corridor and the Southern California Gas (c.1960s) line.

Tetra Tech recommends that this site be found ineligible for listing in the NRHP, because of poorly preserved spatial associations of artifacts that are essential to reconstruct the behavior of people who made, used, or discarded archaeological materials. Staff needs further primary field data on the integrity of the deposit and potential evidence of characteristic military-style trash disposal practices (Bischoff 2000), in order to determine the potential of this site to yield information important to history. Staff therefore recommends that site CA-Riv-9251H (P33-18005) be assumed eligible for listing in the NRHP under Criterion D and for the CRHR under Criterion 4 and the CRHR, for the purpose of the present analysis.

CA-Riv-9259H (P33-18013)

This site consists of two unusual alignments of metal posts which may date to the WWII era. The site measures 1,092 square m (0.27 acres) and is located along the GSEP linear corridor south of I-10 and west of Wiley's Well Road. The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface is composed of stable and active sand dunes, disturbed by off-road vehicle tracks and modern trash. The surface component of the site measures 33.5 m from northeast to southwest and 5.2 m from southeast to northwest. The number of posts present in each feature is uncertain. The site form, the photographs, and the site map provide contradictory information. For the purposes of this evaluation, staff assumes that the site map, which has the largest number of stakes, is correct.

Alignment 1 is an 26.8-m-long alignment of metal posts oriented from northwest to southeast. This feature is located east of Alignment 2. Twenty-eight posts form 14 rows of two posts each. The distance within each pair is approximately 1–2 feet. The distance between each pair is approximately the same distance. Each post projects 6–12 inches above the current ground surface, which is an active sand dune. Each post has a square, flat shaft at the top end with an opening measuring about ¼ x ¼ inch. The top opening appears designed to accept something but nothing was found in or around the stake. Alignment 2 is an 11.9-m-long alignment of 13 metal posts oriented from northwest to southeast. Twelve of the posts form six rows of two posts each. The distance within each pair is approximately 1–2 feet. The distance between each pair is approximately the same distance. Each post projects 10–12 inches above the current ground surface. The thirteenth post is located at the northwest end of Alignment 2, in the northernmost position. It is almost entirely covered by sand. Each post has a square, flat shaft at the top end, with an opening measuring about ¼ x ¼ inch. The top opening appears designed to accept something, but nothing was found in or around the

stake. These two features seem to have the same function, but their slightly different orientation suggests that they may have been constructed and used at different times.

Sites CA-RIV-9230H (approximately 1 mile southeast) and site P33-14152 (approximately 2 miles southwest) both contain similar post alignments. P33-14152 was identified during the field surveys for the Blythe Energy Transmission Line Project (BEPTL). The metal posts were recorded as a possible DTC/C-AMA era feature possibly serving as a temporary barrier, as part of a communicative relay system, or to simulate some sort of explosive device (Carrico et al. 2006). This site was determined not to be eligible for listing in the NRHP and the CRHR. While staff agrees that these two sites are not eligible individually, staff considers P33-14152 and CA-RIV-9230H to be contributing elements to the DTCCL. As such, they are eligible for listing in the NRHP under Criterion D and for the CRHR under Criterion 4 and the CRHR.

Since the original recording of P33-14152, various explosive experts from the US Army Corps of Engineers examined detailed written descriptions and photographs of the metal posts. They concluded that the posts did not appear to be explosive devices (Chris Dalu, personal communication 2008). Due to the unknown nature of the posts, a Tetra Tech explosive expert (UXO Technician III) performed a field inspection of the posts at P33-14152 for the BEPTL project on December of 2008. He suggested that the jagged edges of the posts indicate that they were ripped by low grade explosives such as black powder. He also proposed that the posts served as sand anchors for defensive or minefield-type fencing. Rommel “stakes” would be used for this purpose in firmer soils; however, sandy soils such as those present at this site would require the use of a more effective anchoring system (Keller 2008). Other researchers (Chris Dalu, personal communication 2008) suggest that the posts were “Krypton” light devices that were used to signal aircrafts during night missions in the Palo Verde Area during the DTC/C-AMA World War II training activities. The lights would mark the location of “bomb drop zones”, serving as a reference point for identifying a targets location (Patton 1942). The archaeologists for the applicant do not suggest which of these potential site functions they think is most likely.

The archaeologists for the applicant recommend that this site be found ineligible for listing in the NRHP. Tetra Tech suggests that the integrity of this site is poor because of drifting sand. Staff does not concur. The elements of the two features appear to be *in situ*. Therefore, staff considers site integrity to be good. The resolution of the documentation for the two alignments and the lack of datable artifacts associated with these features makes it difficult to assess the actual date range that they represent, and therefore their potential association with important historic themes. However, the presence of similar features nearby with clear associations with WWII era artifacts, suggests that this site may be a contributing element to the DTCCL. Without further primary field data on the possible function of these features during World War II maneuvers (Bischoff 2000), staff cannot evaluate the site sufficiently to reasonably dismiss the possibility that they may retain the potential to yield information important to history. In fact, historic-era features are rare in the GSEP region. In addition, the function of these features is still unknown, and therefore every example has the potential to provide important clues. Staff recommends that site CA-Riv-9259H (P33-18013) be assumed eligible for listing in the NRHP under Criterion D and for the CRHR under Criterion 4 and the CRHR, for the purpose of the present analysis.

Multiple-Component Archaeological Sites Evaluations and Descriptions

Staff evaluated one multiple-component archaeological site and recommended that it should be assumed eligible for listing in the CRHR. The historic component of this site is also a potential contributor to the DTCCL.

CA-Riv-9205H (P33-17773)

This is an oblong dual component site measuring 3,844 square m (1 acre) in area. It is located near the southern boundary of the southeast portion of the proposed GSEP site footprint, approximately 116 m south of CA-Riv-9204H (P33-17773). The predominant vegetation on the site appears to be Mojave creosote bush scrub. The present site surface is a slightly raised alluvial terrace of desert pavement. The surface component of the site measures approximately 66 m from east to west and 100 m from north to south.

The more particular physical context for site CA-Riv-9205H, extrapolating information from **Cultural Resources Figure 1** to the location of the site, appears to be within the lake deposits of the Ql unit between the 377-foot shoreline and the 370-to–373 foot shoreline (see "Present Process Geomorphology" and "Results of Geoarchaeological Investigations" subsections, above). The possibility of buried cultural resources within the lake deposits is expected to be moderate. However, the depth of these deposits is undetermined. This site is also located in the valley between the McCoy Mountains and Palen Mountains where steeper slopes result in higher-energy sheet wash and in correspondingly poorer preservation of the spatial associations that reflect the behavior of people who made, used, or discarded archaeological materials. Nonetheless, subsurface materials that offer the potential to yield information important to prehistory or history may be present here.

The prehistoric component consists of a light scatter of 8 prehistoric artifacts in the southern portion of the site. The artifacts present include 1 obsidian interior flake, 3 cortical chert flakes, 1 interior basalt flake, 2 quartz monzonite metate fragments, and 1 quartzite mano fragment. This component appears to be primarily a surface deposit, but its actual depth has not been determined.

The historic-period component forms a refuse concentration in the central portion of the site measuring 20 m from east to west and 37 m from north to south. The metal assemblage consists of 50 hole-in-top cans (16 oz, condensed milk, hole-punched), 5 crown bottle caps, 1 smashed metal box, 1 car lamp mount (etched "S+M Lamp Co./MADE IN USA/Los ANGELES/No. 28"), and 1 1983 American penny. The glass assemblage includes more than 50 clear glass bottle fragments (inc. 2 jar rims), more than 20 brown glass bottle fragments (6 bases and 1 jar with maker's mark). Also present were 5 milky white ceramic dish fragments (melted). This component appears to be primarily a surface deposit, but its actual depth is unknown.

In addition to the field investigation, the archaeologists for the applicant also examined historic maps, BLM records, and other historic documents. They found no evidence of any historic dwellings and/or structures on or within several miles. The specific documentary sources examined for this site were unspecified. Artifact types and

chronological indicators suggest that the refuse scatter is domestic in type, probably from a single dumping episode between the 1920s and 1960s. In addition, the artifacts appear to represent common domestic food and/or military issue rations. The kind of activities that might have resulted in the disposal of these artifacts, are unspecified.

The archaeologists for the applicant suggest no age or functional interpretation for the prehistoric component of this site. However, staff notes that the presence of ground stone may indicate a date of as early as the Late Archaic times (8000 to 6000 cal BC) or as late as the Late Prehistoric (1100 cal BC to Contact). The archaeologists recommend that this site be found ineligible for listing in the NRHP, but do not state their reasons for this recommendation. The sparse character of the surface assemblage and the apparent absence of materials that would facilitate the placement of the deposit in time seem to indicate that the site does not have the potential to yield information important to prehistory. Staff therefore recommends that the prehistoric component of site CA-Riv-9205 (P33-17431) is not eligible for listing in the NRHP or the CRHR.

The archaeologists for the applicant further recommend that the historic-period component should also be found ineligible for listing in the NRHP as it does not appear to be associated with events that made a significant contribution to our history, or with the life of a significant person, and does not exhibit characteristics that would yield additional important information to history. The resolution of the documentation for the deposit makes it difficult to assess the actual date range that it represents, and therefore its potential association with important historic themes. Staff notes that these artifacts date to within the period of significance for the DTCCL (Historic District), 1942 to 1944, suggesting that this site may be a contributing element to the district. Without further primary field data on the integrity of the deposit, possible use of these artifacts during World War II maneuvers, and potential evidence of characteristic military-style trash disposal practices (Bischoff 2000), staff cannot evaluate the site sufficiently to reasonably dismiss the possibility that it may retain the potential to yield information important to history. Staff therefore recommends that site CA-Riv-9205 (P33-17797) be assumed eligible for listing in the NRHP under Criterion D and for the CRHR under Criterion 4 and the CRHR, for the purpose of the present analysis.

Cultural Landscape Evaluations and Descriptions

A cultural landscape consists of “geographic area, including both natural and cultural resources, associated with a historic event, activity or person” (NPS 1996). The National Park Service has defined four overlapping categories of cultural landscapes: historic designed, historic vernacular, historic site, and ethnographic. Historic designed landscapes are deliberate artistic creations, reflecting recognized styles, and are often associated with important builders, building trends, or events in the history of the construction of these kinds of landscapes. Historic vernacular landscapes illustrate people’s values and attitudes towards the land and reflect patterns of settlement, use, and development over time. Historic sites are significant for their associations with important events, activities, and persons. Existing features and conditions are defined and interpreted in terms of what happened there at particular times in the past. Finally, ethnographic landscapes can be spaces rather than things that can be owned. These spaces or places are given meaning through their association with local and regional histories, cultural identities, beliefs, and behaviors. Ethnographic landscapes can

include horizons, unmarked spiritual corridors, and places of connection between the earth's surface and the upper and lower realms. While these kinds of landscapes are often associated with Native Americans, they can be associated with any cultural group or belief system. Cultural landscapes can be determined eligible and nominated for inclusion on the NRHP as either sites or districts. As such, these landscapes can be contiguous or noncontiguous (Evans et al. 2001; NPS 1996).

Staff has identified resources which are contributing elements to two cultural landscapes within the GSEP PAAs. The Prehistoric Trails Network Cultural Landscape has 6 potential contributors within the GSEP facility footprint and linear corridor; 24 potential contributors among the sites identified by Tetra Tech in their CHRIS, Class II, and Class III surveys; and 224 (McCarthy 1993) additional potential contributors identified by Energy Commission staff within the ethnographic PAA. The Desert Training Center California-Arizona Maneuver Area (DTC/C-AMA) Cultural Landscape has 14 potential contributors within the GSEP facility footprint and linear corridor and 19 potential contributors among the sites identified by Tetra Tech in their CHRIS, Class II, and Class III surveys. Each landscape is evaluated for eligibility for listing on the CRHR and NRHP, below.

The Prehistoric Trails Network Cultural Landscape

Energy Commission staff here proposes the designation of a noncontiguous cultural landscape (historic district) that incorporates prehistoric archaeological sites associated with the Halchidhoma Trail (CA-Riv-0053T), referred to here as the Prehistoric Trails Network Cultural Landscape (PTNCL). This landscape consists of important destinations in the Colorado Desert near Blythe, California, the network of trails that tie them together, and the features and sites associated with the trails. Six sites, located within the GSEP facility footprint and linear corridor, are potential PTNCL contributors that would be subject to direct impacts. Thirty additional sites identified by Tetra Tech and 224 sites identified by staff are located within the GSEP ethnographic PAA and would be subject to indirect impacts (**Cultural Resources Tables 7** and **8**).

In the 1990s McCarthy (1993) and a group of volunteers recorded 20 km of the Halchidhoma Trail (CA-Riv-0053T) as it curves around the southern and western side of the McCoy Mountains leading from the Blythe Intaligos (geoglyphs) to McCoy Spring (CA-Riv-0132). They identified 227 trail-associated sites and subsidiary trails associated with the Halchidhoma Trail. McCarthy's report provides the basis for preliminary definitions of the boundaries, thematic associations, property types, and significance period of the PTNCL. The boundaries of this cultural landscape would need to be refined as additional pieces are identified, but in broad terms the boundary extends along the length of the historically known route of the Halchidhoma Trail, from where it begins near Blythe at the Colorado River, continuing to the west through the Chuckwalla Valley towards modern Los Angeles, with a suggested width of 10 m. The period of significance would also need to be refined, but it appears that the prehistoric trail systems of southern California were used for thousands of years. Therefore, as a preliminary measure, Energy Commission staff defines the period of significance as the entire prehistoric and early historic periods. The thematic associations may also need to be expanded in the future, but currently include travel, trade, and ritual. Resource

exploitation, particularly the collection of stone tool and ground stone raw materials, is also an important theme.

Characteristic site types for the PTNCL have been described by archaeologists working in the Colorado and Mojave Deserts for decades. Although the discussion here relies on McCarthy (1993), numerous other descriptions that are just as useful are available (Apple 2005; Cleland 2005). The following list is not comprehensive; it should be added to as needed as new patterns are discovered. The PTNCL site types are divided into three categories: *destinations*, *trails*, and *trail-associated* sites or features.

Destinations primarily include water sources, but also include residential, religious, and resource-collection sites. Water-oriented destinations include natural features such as rivers, springs, lakes, rainwater tanks, as well as man-made wells. Residential sites include villages and camps with evidence of a full range of activities. Religious sites include geoglyphs and petroglyphs. The importance of particular destinations is indicated by the web of multiple trails that converge on certain places, often mountain passes or water sources.

Trails can either be created by the movement of traveling feet or formally constructed. They average 30 cm in width and can be traced for many km, interrupted only by gullies and washes. Trails are usually the shortest and most convenient routes from one point on the landscape to another.

Trail-associated sites or features could include: concentrations of ceramics/pot drops, cleared circles, rock rings, rock clusters, rock cairns, rock alignments, petroglyphs, and geoglyphs. When the trail itself is not preserved, its route can often be approximately traced by distinctive patterns of trail-associated sites and features.

The foundation of this cultural landscape is the 227 sites recorded by McCarthy (1993). Only three of these 227 sites were identified by Tetra Tech in their survey of previous research in the region (CA-Riv-0053T, CA-Riv-0132, and CA-Riv-3129). The largest of these sites, and the prehistoric focus of the entire region, is McCoy Spring National Register District (CA-Riv-0132). The site is located on the west side of the McCoy Mountains approximately 5 miles from the Wiley's Well Road Rest Area. This resource is already listed on the NRHP and the CRHR. It was nominated in the 1980s under NRHP Criterion D (similar to CRHR Criterion 4) for its ability to provide information important to the prehistory of the Mojave Desert. At this site, thousands of petroglyph elements are found on scattered outcrops, talus, and float boulders at the inflection of the bajada and the mountain face. The bajada is dissected by one major and several minor arroyos. Within an alcove in the largest arroyo is a small spring that was the focus of prehistoric Native American activity. Present-day vegetation is part of the creosote bush scrub plant community. Also present at the site is a midden deposit with ceramics, lithics, and ground stone. Portions of at least eighteen prehistoric trails and a prehistoric camp site with sleeping circles are also present. One historic-period feature is noted—an access road associated with nearby mining activities and historic cross-country automobile travel.

The significance of the site has been primarily associated with the petroglyphs. Present here are at least 2,141 boulders with over 3,360 rock art panels and at least 7,500

individual design elements, forming the largest concentration of petroglyphs in the region. No other recorded site within the region approaches the density, number, and aesthetic value of the petroglyphs found within the immediate area of McCoy Spring. Two important styles are represented at the site, the Great Basin Abstract style and the Colorado Desert Representational style (Hedges 1973). Also important is the presence of a midden deposit at this site. Stratified refuse deposits are rare in the region, and, as a result, each one of them holds the potential of yielding unique information on the prehistory of the California desert. At the time of the nomination, the site integrity was good and vandalism was minimal. Protection of the site has been aided by the erection of a fence in the 1970s and an aluminum barrier across the road and major wash to prevent vehicle access to the petroglyphs.

Four other important prehistoric destinations were identified by McCarthy (1993) in the McCoy Mountains. These water tanks (CA-Riv-0523, CA-Riv-3149, CA-Riv-4569, and CA-Riv-4699) share many features with McCoy Springs: they are along the main Halchidhoma Trail (CA-Riv-0053T), they are the focus of multiple smaller trails, and rock art is found there.

Other cultural resources should be added to the list of contributors as a connection to the Halchidhoma Trail or the web of associated smaller trails can be demonstrated. Energy Commission staff identified potential contributors to the PTNCL using the following criteria:

1. The site consists entirely of prehistoric ceramics;

2. The site contains a concentration of ceramics similar to a “pot drop”;

3. An existing trail leads in the direction of a site;

4. The site is near a steady supply of water;

5. The site is large, has evidence of a broad range of activities, and otherwise has evidence it was a habitation site; and/or

6. The site is a trail.

Energy Commission staff recommends that the PTNCL is eligible for listing on the NRHP under Criteria A and D and for the CRHR under Criteria 1 and 4.

Under Criteria A/1, a resource is eligible if it is associated with “events that have made a significant contribution to the broad patterns of our history”. In the context of a Native American site where its importance is not recorded in written form, National Register Bulletin 38 (NPS 1998, pp. 12–13) makes it clear that the word “our” refers to the group that finds the property significant and "history" includes both traditional oral and written history. Important events can include specific events, or repetitive trends. Places referred to in Native American oral histories and creation stories, therefore, are potentially eligible.

Native American groups in the Mojave Desert consistently accord mythological importance to springs, petroglyph sites, and particularly trails systems. Trails across the

desert mark the locations of travels of ancestral groups as they migrated to the confluence of the Gila and Colorado Rivers. Trails also facilitate dream travel to these places and the times when events mentioned in story and song occurred (Cleland 2005, p. 132). The particular trail that forms the connecting link for this cultural landscape, the Halchidhoma Trail (CA-Riv-0053T), is well known from multiple historical and ethnographic sources. It was an essential trade, transportation, and ritual route for Native American peoples and early European visitors in the Colorado Desert during prehistoric and historic times. This route was an essential connection between the Pacific Coast and the Southwestern deserts of Arizona and New Mexico.

Energy Commission staff considers the resources that make up the PTNCL to be significant under NRHP Criterion A (CRHR Criteria 1), for their ties to important events in American history. However, most property types associated with the PTNCL exist today as archaeological resources, such as petroglyphs, pot drops, cleared circles, and webs of intersecting trails. These sites are also considered register-eligible under Criterion D/4 for their ability to yield information important in history and prehistory.

Six sites, located within the GSEP facility footprint and linear corridor, are potential PTNCL contributors expected to be subject to direct impacts. Three of these sites are considered eligible, and the 3 others are assumed eligible, for inclusion in the NRHP. The remaining 248 sites are located within the GSEP ethnographic PAA and are expected to be subject to indirect impacts. All of these sites are eligible for listing in the NRHP as contributors to the PTNCL (**Cultural Resources Tables 8** and **11**).

CULTURAL RESOURCES Table 11
Potential Contributors to the Prehistoric Trails Network Cultural Landscape in the Vicinity of the GSEP

Resource	Description	When Found	Period/ Era	Location	Info Source
Prehistoric					
CA-Riv-0053T	Trail: 22+ km, leads from Colorado River to McCoy Spring around south and west side of McCoy Mountains, multiple associated sites and features.	Previously known	Prehistoric	In Ethno-graphic PAA	McCarthy 1993
CA-Riv-0132 (P33-00132)	Temporary Camp: McCoy Spring National Historic District, 40 acres, at spring, 18 trails, 3000+ rock art images, 1000+ artifacts, midden, rock rings, cleared circles.	Previously known	Prehistoric	In Ethno-graphic PAA	McCarthy 1986, 1993
CA-Riv-0260 (P33-00260)	Temporary Camp: 62 acres near lake edge, 1000+ artifacts, ceramics, lithics, ground stone, FAR. 5 concentrations, buried deposits, pot drops.	Previously known	Prehistoric	Linear Corridor	Ramirez 2008 (update)
CA-Riv-0663 (P33-00663)	Temporary Camp: 186 acres, 1000+ artifacts, lithics (jasper, quartzite, rhyolite, chert, and chalcedony) 1 Corner Notched projectile point fragment, 1 biface fragment, ceramics (Parker buffware and Tizon brownware, and greyware), mano and metate fragments some of green shale, FAR, and 1 rock alignment. May include CA-Riv-6900.	Previously known	Prehistoric	Linear Corridor	Pallette et al., 1989 Farmer et al., 2010
P33-01222	Temporary Camp: located near dry lake shore (n=100+), 7 loci of metates and manos, debitage of quartz and chalcedony cores and flakes. Site disturbed by ORV.	Previously known	Prehistoric	In Ethno-graphic PAA	Cook 1976
P33-01818	Ceramic Scatter: 53 sherds, Tumco Buff, pot drop	Previously known	Prehistoric	In Ethno-graphic PAA	Carrico 1980
P33-01840	Artifact Scatter: just south of I-10, 2 pot drops (n=71), 2 lithics, 1 ground stone fragment.	Previously known	Prehistoric	In Ethno-graphic PAA	Musser & Boyer 1976
P33-02157	Temporary Camp: along lake edge, near I-10, artifacts (n=30+), ceramic (buff/ Tizon brown ware), ground stone fragments (metates/manos), lithic flakes (quartz/green andesitic meta-volcanic).	Previously known	Prehistoric	In Ethno-graphic PAA	Cardenas 1981

Resource	Description	When Found	Period/ Era	Location	Info Source
CA-Riv-2159 (P33-02159)	Temporary Camp: (n=100s) with 5 loci, and 1 pot drop (n=7), along lake edge, lithics (flakes: rhyolite, basalt, chalcedony, agate, jasper, chert, granite, andesite) and ground stone (manos, metates, hammerstones).	Previously known	Prehistoric	In Ethno-graphic PAA	Cardenas 1981
P33-03129	Trail: 3.5 km long, leads to the southwestern side of the McCoy Mountains.	Previously known	Prehistoric	In Ethno-graphic PAA	McCarthy 1991
P33-03801	Ceramic Scatter: (n=5) Parker buffware sherds, pot drop	Previously known	Prehistoric	In Ethno-graphic PAA	Pallette et al. 1989
P33-03808	Ceramic Scatter: (n=7) Tumco Red-on-buff sherds, pot drop	Previously known	Prehistoric	In Ethno-graphic PAA	Mooney & Associates 1990
P33-03809	Ceramic Scatter: (n=7+) Tumco buff sherds, pot drop	Previously known	Prehistoric	In Ethno-graphic PAA	Mooney & Associates 1990
CA-Riv-6900	Temporary Camp: (100+), lithics, ground stone. Possibly part of CA-Riv-0663.	Previously known	Prehistoric	In Ethno-graphic PAA	BLM 1977
CA-Riv-9037 (P33-17421)	Temporary Camp: near lake shore, artifacts (n=17), lithics, ground stone, 1 brownware sherd, 5 concentrations of FAR.	GSEP Class II	Prehistoric	In Ethno-graphic PAA	Farmer et al. 2009
CA-Riv-9055 (P33-17439)	Temporary Camp: near lake shore, artifacts (n=53) including debitage, ground stone, ceramic fragments, FAR concentration.	GSEP Class II	Prehistoric	In Ethno-graphic PAA	Farmer et al. 2009
CA-Riv-9064 (P33-17448)	Temporary Camp: near lake edge, artifacts (n=120+), 2 concentrations, 3 projectile points, 2 bifaces, 2 ground stone. Possibly Archaic period.	GSEP Class II	Prehistoric	In Ethno-graphic PAA	Farmer et al. 2009
CA-Riv-9071 (P33-17455)	Temporary Camp: 78 acres, 4 concentrations (n=250+), lithics, ceramics, ground stone, FAR.	GSEP Class II	Prehistoric	In Ethno-graphic PAA	Farmer et al. 2009
CA-Riv-9072 (P33-17456)	Temporary Camp: 350 acres, artifacts (n=1000+), debitage, Rose Spring projectile point (AD 200 to 1100), brownware sherds, FAR, ground stone. May be part of CA-Riv-9078.	GSEP Class II	Prehistoric	In Facility Footprint	Farmer et al. 2009
CA-Riv-9078 (P33-17462)	Temporary Camp: (n=3000+) artifacts, 2000 ground stone, lithics, FAR. Milling tool manufacturing? May be part of CA-Riv-9072.	GSEP Class II	Prehistoric	In Ethno-graphic PAA	Farmer et al. 2009
CA-Riv-9079 (P33-17463)	Temporary Camp: artifacts (n=500+), lithics, 5 ground stone, 1 marine clam shell fragment.	GSEP Class II	Prehistoric	In Ethno-graphic PAA	Farmer et al. 2009

Resource	Description	When Found	Period/ Era	Location	Info Source
CA-Riv-9226 (P33-17795)	Temporary Camp: near lake shore (n=100+), lithics, 3 brownware sherds, 70 FAR, ground stone.	GSEP Class III	Prehistoric	In Ethno-graphic PAA	Farmer et al. 2009
CA-Riv-9227 (P33-17796)	Artifact Scatter: (n=18), lithics, brownware sherds (n=14) pot drop, 1 marine shell fragment	GSEP Class III	Prehistoric	Linear Corridor	Farmer et al. 2009
CA-Riv-9249 (P33-18003)	Ceramic Scatter: Brownware sherds (n=20) pot drop.	GSEP Class III	Prehistoric	Linear Corridor	Farmer et al. 2009
CA-Riv-9250 (P33-18004)	Artifact Scatter: (n=75) 1 concentration with 2 pot drops (33 and 29 sherds) Brownware sherds, 9 lithics, 3 FAR.	GSEP Class III	Prehistoric	In Ethno-graphic PAA	Farmer et al. 2009
CA-Riv-9255 (P33-18009)	Artifact Scatter: (n=40+) artifacts, 10 Brownware "pot drop" sherds, 4 Brownware sherds, 3 Redware sherds, lithics, 3 FAR, 1 ground stone.	GSEP Class III	Prehistoric	Linear Corridor	Farmer et al. 2009
CA-Riv-9260 (P33-18014)	Artifact Scatter: (n=108+) artifacts, 100 Brownware "pot drop" sherds, 7 other Brownware sherds, 1 chert uniface.	GSEP Class III	Prehistoric	In Ethno-graphic PAA	Farmer et al. 2009
P33-17977	Ceramic Scatter: (n=11) Brownware sherds pot drop	GSEP Class III	Prehistoric	In Ethno-graphic PAA	Farmer et al. 2009
P33-01131	Artifact Scatter: Widely dispersed low density pot drop: 50 Tizon brownware sherds, 1 mano, 1 core fragment.	Previously known	Prehistoric	In Ethno-graphic PAA	Dittman 1981
Dual-Component					
P33-01516	Temporary Camp/Refuse Scatter: (n=1000+) along dry lake shoreline, ground stone, lithic scatter, thermal fractured rock. WW II military artifacts.	Previously known	Prehistoric /Historic	In Ethno-graphic PAA	Ritter 1975
CA-Riv-9224 (P33-17793)	Temporary Camp/Refuse Scatter: Prehistoric (n=60+), 2 concentrations, FAR in 2 possible hearths, brownware pot drop (n=28+), 1 Desert Side-notched projectile point (AD 1100 to Contact), Historic (n=6) .45 caliber bullets, mess-kit spoon stamped "US", C-ration coffee can, pocket knife. Possibly part of CA-Riv-260.	GSEP Class III	Prehistoric /Historic	In Ethno-graphic PAA	Farmer et al. 2009

Energy Commission staff concludes that GSEP impacts to the established contributors to this register-eligible cultural landscape, if unavoidable, must be mitigated.

Desert Training Center California-Arizona Maneuver Area

Energy Commission staff here proposes the designation of a contiguous cultural landscape (historic district) that incorporates historical archaeological sites (**Cultural Resources Table 12**) associated with Gen. Patton's World War II Desert Training Center California-Arizona Maneuver Area (DTC/C-AMA) (DTCCL) in the Chuckwalla Valley and on the Palo Verde Mesa. This landscape extends beyond the GSEP archaeological PAA, but has 14 potential contributors within the GSEP facility footprint and linear corridor. These sites are expected to be subject to direct impacts from GSEP. An additional 19 potential DTCCL contributors were identified by Tetra Tech in their CHRIS, Class II, and Class III surveys, but the applicant expects that these sites would not be impacted by the project.

CULTURAL RESOURCES Table 12
Potential Contributors to the DTC/C-AMA Cultural Landscape in the GSEP PAAs

Resource	Description	When Found	Period/ Era	Location	Info Source
Historical					
P33-01483	Historic Feature: Military mound, horseshoe-shaped, low earth mound. (1940s)	Previously known	Historic	Vicinity	Crowley 1978
P33-13598	Refuse Scatter: (n=8+) WW II era cans.	Previously known	Historic	Linear Corridor	Mooney & Associates 2004
P33-13655	Historic Feature and Refuse Scatter: Possible WW II foxholes and cans (1940s)	Previously known	Historic	Avoided	Mooney & Associates 2004
CA-Riv-9035H (P33-17419)	Refuse Scatter: Cans, bottle glass, misc.	GSEP Class II	Historic	Avoided	Farmer et al. 2009
CA-Riv-9059H (P33-17443)	Refuse Scatter: Can scatter. Prehistoric FDLA-Iso-10 recorded within site boundaries.	GSEP Class II	Historic	Avoided	Farmer et al. 2009
CA-Riv-9063H (P33-17447)	Refuse Scatter: Cans, spoon (military), pliers.	GSEP Class II	Historic	Avoided	Farmer et al. 2009
CA-Riv-9074H (P33-17458)	Refuse Scatter: WW II era cans and bottles.	GSEP Class II	Historic	Avoided	Farmer et al. 2009
CA-Riv-9077H (P33-17461)	Refuse Scatter: Cans and bottles (1940s).	GSEP Class II	Historic	Avoided	Farmer et al. 2009
CA-Riv-9203H (P33-17772)	Refuse Scatter: Pull-tab aluminum cans, food cans, bottle (1954–pres)	GSEP Class III	Historic	In Facility Footprint and Linear Corridor	Farmer et al. 2009
CA-Riv-9204H (P33-17773)	Refuse Scatter: Can scatter, bottles (1932-1953)	GSEP Class III	Historic	In Facility Footprint	Farmer et al. 2009
CA-Riv-9211H (P33-17780)	Refuse Scatter: Cans, bottle glass, 1934 penny	GSEP Class III	Historic	In Facility Footprint	Farmer et al. 2009
CA-Riv-9213H (P33-17782)	Refuse Scatter: Approximately 60 cans.	GSEP Class III	Historic	In Facility Footprint	Farmer et al. 2009
CA-Riv-9214H (P33-17783)	Refuse Scatter: Approximately 10 cans.	GSEP Class III	Historic	In Facility Footprint	Farmer et al. 2009
CA-Riv-9225H (P33-17794)	Refuse Scatter: 7 cans, mess-kit fork (1940s military?)	GSEP Class III	Historic	Avoided	Farmer et al. 2009

Resource	Description	When Found	Period/ Era	Location	Info Source
CA-Riv-9228H (P33-17797)	Refuse Scatter: 10 cans, bottle base (1938-1951), bottle base (1916-1931), razor blade, glass fragments (1940s military?)	GSEP Class III	Historic	Linear Corridor	Farmer et al. 2009
CA-Riv-9230H (P33-17799)	Historic Feature and Refuse Scatter: stake alignment and 30+ C-ration cans, 13 other cans (1940s military?)	GSEP Class III	Historic	Avoided	Farmer et al. 2009
CA-Riv-9245H (P33-17999)	Refuse Scatter: 8 cans, "New Texaco Motor Oil" can (c. 1937), 1 "Dietz All Weather" kerosene construction flare, Aladdin Industries "Aladdins Economy Thermos Bottle"	GSEP Class III	Historic	Linear Corridor	Farmer et al. 2009
CA-Riv-9246H (P33-18000)	Refuse Scatter: 1 metal shoe last, 2 small donkey/pony shoes, 1 brass compass w/plastic lens, 5 C-ration cans, 1 Prince Albert style tobacco tin, 1 white milk glass jar w/metal lid embossed Mentholatum/ Reg/ Trade/ Mark (c.1960-post)	GSEP Class III	Historic	Avoided	Farmer et al. 2009
CA-Riv-9248H (P33-18002)	Refuse Scatter: 8 .30 caliber machine gun cartridges (stamped base 1938 and 1940), 12 gauge shotgun shell brass, 1 coffee can "Nescafe" (c. 1940s-1960s), 13 cans, automobile leaf spring, razor blade, metal fragments (1940s military?)	GSEP Class III	Historic	Linear Corridor	Farmer et al. 2009
CA-Riv-9251H (P33-18005)	Refuse Scatter: 2 .30 caliber machine gun cartridges (stamped base 1940),1 threaded lid coffee can, 2 C-ration cans, 1 pocket knife, 3 cans, bailing wire (1940s military?)	GSEP Class III	Historic	Linear Corridor	Farmer et al. 2009
CA-Riv-9252H (P33-18006)	Refuse Scatter: 1 amber glass beer bottle (Anchor Hocking post 1937), 4 C-ration cans, 7 sanitary cans (1940s military?)	GSEP Class III	Historic	Avoided	Farmer et al. 2009
CA-Riv-9253H (P33-18007)	Refuse Scatter: 1 C-ration can, 6 sanitary cans, 1 large beverage can, glass fragment (1940s military?)	GSEP Class III	Historic	Avoided	Farmer et al. 2009
CA-Riv-9254H (P33-18008)	Refuse Scatter: cans (N=12)	GSEP Class III	Historic	Linear Corridor	Farmer et al. 2009
CA-Riv-9258H (P33-18012)	Refuse Scatter: 61 C-ration cans, 7 soluble coffee cans, 72 cans, 1 .30 caliber machine gun cartridge (stamped base 1940), glass bottle fragments (Owens Illinois c. 1929-1957), 7 coffee cans external thread lid (1940s military?)	GSEP Class III	Historic	Linear Corridor	Farmer et al. 2009

Resource	Description	When Found	Period/ Era	Location	Info Source
CA-Riv-9259H (P33-18013)	Historic Feature: Stake Alignments: (n=2) (1940s military?)	GSEP Class III	Historic	Linear Corridor	Farmer et al. 2009
CA-Riv-9261H (P33-18015)	Refuse Scatter: 6 C-ration cans, 1 soluble coffee can, 1 tobacco tin (1940s military?)	GSEP Class III	Historic	Avoided	Farmer et al. 2009
CA-Riv-9262H (P33-18016)	Refuse Scatter: 80 C-ration cans, 4 soluble coffee cans, 1 military mess fork stamped "US", 1 tobacco tin (1940s military?)	GSEP Class III	Historic	Avoided	Farmer et al. 2009
CA-Riv-9263H (P33-18017)	Refuse Scatter:17 C-ration cans, 1 cone-top can, 6 tobacco tins, 1 boot sole, 1 gas tank cap, 1 clear glass bottle (Owens Illinois c. 1929-1959), 1 large bolt, 1 D-size battery (1940s military?)	GSEP Class III	Historic	Avoided	Farmer et al. 2009
Dual-Component					
P33-01516	Temporary Camp/Refuse Scatter: (n=1000+) along dry lake shoreline, ground stone, lithic scatter, thermal fractured rock. WW II military artifacts.	Previously known	Prehistoric /Historic	In Ethnogra-phic PAA	Ritter 1975
CA-Riv-9205H (P33-17774)	Artifact Scatter/ Refuse Scatter: Debitage (n=4); mano, 2 metate fragments. Glass bottles (post 1945), auto parts (1930-1940), condensed milk cans.	GSEP Class II	Prehistoric /Historic	In Facility Footprint	Farmer et al. 2009
CA-Riv-9082H (P33-17466)	Lithic Scatter/Refuse Scatter: Debitage (n=3). Cans (n=6)	GSEP Class II	Prehistoric /Historic	Avoided	Farmer et al. 2009
CA-Riv-9224 (P33-17793)	Temporary Camp/Refuse Scatter: Prehistoric (n=60+), 2 concentrations, FAR in 2 possible hearths, brownware pot drop (n=28+), 1 Desert Side-notched projectile point (AD 1100 to Contact), Historic (n=6) .45 caliber bullets, mess-kit spoon stamped "US", C-ration coffee can, pocket knife. Possibly part of CA-Riv-260.	GSEP Class III	Prehistoric /Historic	Avoided	Farmer et al. 2009
CA-Riv-9247 (P33-18001)	Ceramic Scatter/Refuse Scatter: Brownware sherds (n=3), 4 C-ration cans, 13 sanitary cans, 1 nut and bolt, 1 clear glass jar – Armstrong Cork Company (c.1938 -1969)	GSEP Class III	Prehistoric /Historic	Avoided	Farmer et al. 2009
Unknown					
CA-Riv-0259 (P33-00259) or (P33-13656)	Prehistoric Rock Rings or WWII era foxholes with refuse scatter?	Previously known	Unknown	Linear Corridor	Gester 1965 Mooney & Associates 2004

The BLM has nominated this district to the NRHP several times. Each time the nomination was rejected mainly because the resource was not yet 50 years old at the time of the nomination. As part of the nomination process, BLM sponsored a detailed archaeological study of the resource which resulted in the publication of a cultural context (Bischoff 2000). Staff notes that the resource is currently more than 50 years old and proposes to accept the boundary, thematic associations, property types, and significance period as laid out in Bischoff's context (2000). The relevant themes include U.S. Preparation for World War II, U.S. Military Training, Gen. George S. Patton. Jr., and Gen. Walton Walker. Depots, airfields, ranges, bivouacs, maneuver areas, camps, and hospitals are among some of the property types included in the district. Following Bischoff (2000), the significance period is preliminarily defined as 1942–1944.

Energy Commission staff recommends that DTCCL is eligible for listing on the NRHP under Criterion D (CRHR Criterion 4). The DTC/C-AMA was the largest and the only such military training facility in American military history. The training that took place here undoubtedly helped to win World War II. Most property types associated with the DTC/C-AMA, across the full extent of the resource, exist today as archaeological resources, such as refuse deposits, tank tracks, foxholes, and bivouacs. These sites would be considered primarily eligible under NRHP Criterion D (CRHR Criterion 4) for their ability to yield information important in history.

Military records report that the Chuckwalla Valley and portions of the proposed project 's PAAs were primarily used as maneuver areas, campsites, and small group training areas. Here soldiers practiced desert survival and infiltration techniques. The remains of these smaller exercises are undoubtedly more ephemeral than those involving 15,000 men, however, evidence may still be present. Artifacts and features associated with them would most likely be shell casings, grenade containers, foxholes, C-ration cans, and other refuse (Bischoff 2000, p .116). Wiley's Well was used as a campsite on multiple occasions. The presence of water at the site undoubtedly contributed to its importance. During maneuvers in 1943, the signal company's pigeon detachment set up a false camp at Wiley's Well, fooling the opposing side into thinking that there was a full headquarters at the camp (Bischoff 2000, p. 117). Evidence of these specific activities may still be present within the GSEP site footprint.

Fourteen historic-period archaeological sites and 1 dual-component site, identified within the GSEP site footprint and the linear facilities corridor, are potentially contributing elements to the DTCCL. The information provided in the AFC was not sufficient to allow staff to determine the eligibility of these resources. Therefore, staff recommends that these sites, as contributors to the DTCCL, be assumed eligible for inclusion in the NRHP and the CRHR. Staff also recommends that impacts to them, if unavoidable, be mitigated by data recovery.

C.3.5.3 Built-Environment Resource Evaluations and Descriptions

To staff it appears that two linear built-environment resources in the proposed GSEP built-environment PAA may be impacted by the project. These resources include a historic-period road and a historic-period electric transmission line. Descriptions and evaluations of the NRHP and CRHR eligibility of the two resources are presented below. The historian for the applicant recorded these two resources but did not provide

any recommendations regarding their eligibility for listing on the NRHP or CRHR (Farmer et al. 2009, app. F).

Wiley's Well Road

Wiley's Well Road is a historic-period road that consists of both an unimproved dirt two-track owned and maintained by the BLM and a 40-foot-wide, two-lane paved road owned and maintained by Riverside County. Transportation infrastructure associated with this road appears to include Wiley's Well, the I-10 overcrossing, Wiley's Well Road Rest Area, and possibly McCoy Spring. The road intersects with the proposed GSEP linear facilities corridor in two places, south of I-10 and near the Wiley's Well Road Rest Area. The paved portion of the road begins at Wiley's Well Road Rest Area, on the north side of I-10, and crosses I-10 heading south to Chuckwalla State Prison. The unimproved portion of the road extends north from Wiley's Well Road Rest Area between the Palen and McCoy Mountains in the direction of McCoy Spring and the abandoned mining town of Midland. A number of roads intersect near the Midland ghost town site, and the route of the road beyond this area is unclear. South of the Chuckwalla State Prison, the unimproved section of the road continues for 9 miles until it intersects with the old Bradshaw Trail. This is the location of Wiley's Well, which is currently a BLM campground and rock-hounding site. The road continues south through BLM-managed land towards the Salton Sea.

Wiley's Well Road appears on historic maps in the 1930s after improvements were made to U.S. Highway 60-70, which it intersects. During this period, Wiley's Well Road was an unimproved dirt and gravel road. Historic maps indicate that by 1951 Wiley's Well Road had been improved and was a graded dirt road for the first five miles south of Highway 60-70 and continued southerly as an unimproved road. The road was improved when it was extended north, past Highway 60-70, to connect with roads that traversed the Palen and McCoy Mountains in the direction of McCoy Spring and the mining town of Midland. Improvements were again made to Wiley's Well Road in 1969 when part of the alignment of Highway 60-70 became I-10 when that freeway was constructed. Wiley's Well overcrossing was constructed over both eastbound and westbound lanes of I-10, and a portion of Wiley's Well Road was paved; the remainder was left as a dirt road. In 1987, Wiley's Well Road was again improved when Chuckwalla State Prison was constructed. The prison can be accessed from Wiley's Well Road and is to the southwest of the Wiley's Well Road interchange with I-10. The alignment of Wiley's Well Road has remained the same over time (Farmer et al. 2009, app. F).

Wiley's Well Road is associated with three historic migrations tied to mining discoveries in southern California and nearby parts of Arizona. First, this road is important as an offshoot of the Bradshaw Trail. This was an overland stage route pioneered by William Bradshaw in 1862 connecting San Bernardino, via San Gorgonio Pass, Palm Springs, and the north shore of the Salton Sea, eventually reaching the Colorado River near Blythe. This route followed traditional Indian trails and was used between 1862 and 1877 to transport miners and other passengers to the gold fields at La Paz (Ehrenberg), Arizona. A second mining boom in the Blythe area began in 1907. Wiley's Well Road was named for A. P. Wiley, storekeeper and postmaster in Palo Verde (just south of Blythe). Wiley financed miners prospecting in the area and in 1907 financed an

expansion of the well first established 1896 by a stagecoach company using the Bradshaw Trail. The well was used by cattle ranchers, prospectors, and early automobile travelers until the rapidly falling water table made the water difficult to access and too salty to drink (Farmer et al. 2009, app. F). Around this same time, gypsum was found in the McCoy Mountains. A mining town, Midland, was established here. From 1925 to the 1960s, Midland was a company town owned by the U.S. Gypsum Co. The company harvested vast amounts of gypsum from the area. At its peak, the town had a population of approximately 1,000. The improvements to Wiley's Well Road in the 1940s and 1950s appear to extend the road past McCoy Spring to Midland.

Based on the information above, staff concludes that Wiley's Well Road is associated with important historic trends in regional community and economic development and is therefore eligible for listing on the CRHR under Criterion 1. There appear to be two periods of significance. The first period is 1862 to 1877, when the road was associated with the Bradshaw Trail and the gold mines in La Paz, Arizona. The second period of significance was between 1907 and the 1960s when the road was a transportation corridor to the gypsum mines of Midland. During both of these periods the road was an unimproved, dirt two-track road crossing a relatively empty and forbidding desert. As such, staff suggests that the paved sections of Wiley's Well road and their associations with the rest area, I-10, and Chuckwalla State Prison do not retain integrity of setting, integrity of feeling, or integrity of association. However, the unimproved sections of Wiley's Well Road do appear to retain the integrity of the original, rural desert, two-track road. Only these unimproved sections of the road are therefore eligible for listing on the CRHR under Criterion 1.

Wiley's Well Road does not appear to be eligible for listing on the CRHR under any other criteria. Although the well was named after A. P. Wiley and the road after the well, the road gets its main significance from its association with the Bradshaw Trail and the mining boom in La Paz, rather than an association with this individual. Therefore, the road does not appear to be eligible for listing on the CRHR under Criterion 2. According to the documentation provided by the historian for the applicant, both the unimproved dirt and paved portions of the road were built using standard construction techniques. Therefore the road does not appear to embody a distinctive type, period, or method of construction, and is not eligible for listing on the CRHR under Criterion 3. Finally, the road and its associated transportation infrastructure are also not eligible for the CRHR under Criterion 4 because they do not appear to contain important scientific data related to our history.

Blythe-Eagle Mountain Transmission Line

The 161-kV Blythe-Eagle Mountain Transmission Line runs 52.1 miles from Blythe-Eagle Mountain Substation to Dunes Substation in Blythe. It was built in the 1950s using H-frame wood poles, some of which were replaced in 2002. This linear resource intersects with the proposed linear facilities corridor where the transmission line cuts diagonally to the north avoiding the Wiley's Well Road Rest Area.

The present electrical transmission line system operates in the 220–500-kV range. These lines move bulk power into and around the system to high-voltage substations in

the area, where the power is converted down to sub-transmission levels of 115–33 kV. Before 1913, the highest voltage lines in the Los Angeles area were operated in the 10–75-kV range. Some of the earliest distribution lines were built to serve rural communities. During the 1930s any circuits built were those that extended lines previously constructed in the 1920s. Many of these lines focused on following railroad spur lines and existing distribution lines to growing communities. During the late 1920s, the Colorado River Valley, where the study area is located, was provided with electricity by Southern Sierras Power and its subsidiaries. With the end of WW II, a boom in population occurred throughout the state. New industries and new residents came to California, including thousands of military men and their families. As populations grew, more utility customers were added, prompting Southern California Edison and other electrical companies to expand their services. This growth meant that more lines were constructed and extended. In the 1950s, when the Blythe-Eagle Mountain transmission line was constructed, Blythe had a large population, due to its fertile agricultural lands and the advent of the railroad and the automobile, which brought new residents to the area. In 1940 the population of Blythe was approximately 2,350, and by 1950 the population was over 4,000 (Farmer et al. 2009, app. F).

Typically, electrical transmission and distribution facilities that are evaluated CRHR-eligible achieve that status by way of their association with other historically significant facilities (that is, eligibility under Criterion 1). Borrowed from telegraph transmission technology, wood-pole support structures such as those used in the 161-kV Blythe-Eagle Mountain Transmission Line have been used for electrical transmission or distribution lines from the outset, and the technology has changed very little. The common and non-distinctive nature of wood-pole transmission or distribution line structures disqualify them as potentially CRHR-eligible under Criterion 3, being purely functional and utilitarian in use and common in appearance. A wood-pole transmission or distribution line could, however, be significant under Criterion A and/or Criterion B by way of an association with a significant facility (Taylor 2005).

Staff concludes that the 161-kV Blythe-Eagle Mountain Transmission Line is not eligible for inclusion in the CRHR. Evaluated under Criterion 1, this linear resource is not associated with events that have made a significant contribution to broad patterns in our history. Rather it represents a common trend within the context of residential development of the United States after World War II. Research did not indicate that this transmission line was associated with any historically significant persons, and so it does not appear to be eligible under Criterion 2. Under Criterion 3, this transmission line does not embody a distinctive type, period, or method of construction. Instead, it represents a fairly standardized type and construction method shared with telegraph lines. This resource is also not eligible under Criterion 4 because it is unlikely to yield information important to history.

Summary of NRHP- and CRHR-Eligible Cultural Resources for the Genesis Solar Energy Project

Forty-three individual resources were identified within the GSEP PAAs. Staff recommends that 15 of the prehistoric archaeological resources in the GSEP plant footprint and linear facilities corridor are not eligible for listing on the NRHP and the

CRHR. These sites are all extremely small artifact scatters that appear to be random collections of isolates.

There are presently 24 further resources in the proposed GSEP site footprint and linear facilities corridor that staff assumes are eligible for listing in the CRHR for the purpose of the present siting case. These resources include 9 prehistoric sites, 14 historical archaeological sites, and the historic-period component of 1 multi-component site. Six of the prehistoric sites within the GSEP footprint and linear facilities corridor may be contributing elements to the PTNCL. All 15 of the historical archaeological sites have the potential to be contributing elements to the Desert Training Center California-Arizona Maneuver Area Cultural Landscape (Historic District).

Staff recommends that 6 of these 43 resources are eligible for listing on the NRHP and the CRHR. These resources are, consequently, historical resources for the purposes of CEQA. They include:

1. DTCCL (Historic District),

2. PTNCL (248 additional resources with indirect impacts)

3. Archaeological Resource CA-Riv-0260 (contributor to PTNCL),

4. Archaeological Resource CA-Riv-0663 (contributor to PTNCL),

5. Archaeological Resource CA-Riv-9072 (contributor to PTNCL), and

6. Built-environment Resource Wiley's Well Road.

The eligible portion of the Wiley's Well Road is not within the built-environment PAA, and is therefore the applicant expects that it would not be impacted.

By benefit of the Energy Staff's recommendations, these assumed-eligible and recommended-eligible resources are historical resources under CEQA, and the consideration of the character of the impacts of the proposed project on them is a requisite part of the present analysis. A program to mitigate those impacts is presented below.

C.3.6 ASSESSMENT AND MITIGATION OF IMPACTS

Having identified cultural resources that are recommended as eligible for either or both the NRHP and the CRHR, staff then identified GSEP impacts to those resources and assessed the severity of them.

C.3.6.1 METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE OF IMPACTS TO HISTORICAL RESOURCES

Under CEQA, "a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment" (Pub. Resources Code, § 21084.1). Thus, staff analyzes whether a proposed project would cause a substantial adverse change in the significance, that is,

the CRHR eligibility, of all historical resources identified in the Cultural Resources Inventory as CRHR eligible. The degree of significance of an impact depends on:

- The cultural resource impacted;
- The nature of the resource's historical significance;
- How the resource's historical significance is manifested physically and perceptually;
- Appraisals of those aspects of the resource's integrity that figure importantly in the manifestation of the resource's historical significance; and
- How much the impact will change those integrity appraisals.

Staff usually applies the above criteria to power plant projects, but, under the approach staff employed for the SA/DEIS, all GSEP project-related direct, indirect, and cumulative construction impacts to known cultural resources located in the PAAs that the Energy Commission staff did not determine to be ineligible for either the NRHP or the CRHR were assumed to be significant. Staff, however would not assume that all direct, indirect, and cumulative construction impacts to yet-to-be-discovered cultural resources would be significant, but would be assessed at the time of discovery, applying the above criteria. Staff recommends that these impacts be avoided or mitigated by means of data recovery.

C.3.6.2 CONSTRUCTION IMPACTS TO NRHP- AND CRHR-ELIGIBLE CULTURAL RESOURCES

To determine the GSEP's impacts, staff developed a concept of the area in which cultural resources would be impacted by the project as one large, three-dimensional spatial block—an "impact block," entailing the full extent of the project's below-grade impacts (inclusive of all foundations and trenches) and above-grade impacts (inclusive of all above-ground facilities), and delimiting both the project's physical impacts to surficial and buried cultural resources and perceptual impacts to the settings of built-environment resources. Staff has assumed that all cultural resources located within the impact block would be significantly impacted by the project and that these impacts are significant, unavoidable, and would require mitigation.

Staff asked NextEra to provide graphical representations of their potential "impact block," and received two figures showing the anticipated disturbance below ground and the anticipated aboveground intrusion into the flat landscape. From these (TTEC 2010c, Sheets 1-6), staff concludes that:

- General cutting and filling would disturb the overall GSEP plant site to a maximum depth of 2 feet.
- In the solar array fields, GSEP collector foundation excavations would cause ground disturbance down to an unspecified depth, and the collectors would intrude into the flat landscape to a maximum height of 25 feet.
- In the power blocks, GSEP equipment foundation excavations would cause ground disturbance down to a maximum depth of 25 feet, and the equipment would intrude into the flat landscape to a maximum height of 75 feet.

- Along the linear facilities corridor, GSEP natural gas pipeline trench excavations would cause ground disturbance down to a maximum depth of 10 feet. The transmission line supports would cause ground disturbance down to a depth of 15 feet and create an intrusion into the flat landscape to a maximum height of 75 feet.

From this, staff has determined that all archaeological resources—recommended and/or assumed register-eligible, known and possibly yet to be discovered during construction, and located within the GSEP's impact block—would be significantly impacted by the GSEP's construction.

Staff has concluded that the proposed project has the potential to directly and indirectly impact two cultural landscapes staff considers eligible for the NRHP and CRHR. Direct impacts in the form of complete destruction of six resources are expected for PTNCL contributors within the GSEP facility footprint and linear corridor. Indirect impacts including, but not limited to increased vandalism, is expected for 248 PTNCL contributors within the GSEP viewshed (including the McCoy Spring National Register District). These indirect impacts may negatively affect the integrity the location, setting, and feeling of the contributors and are therefore significant. Staff also concludes that the proposed project may directly impact 13 historic-period resources, 1 dual-component resource, and 1 unknown cultural resource that are potential contributing elements to the World War II Desert Training Center California-Arizona Maneuver Area (DTC/C-AMA) Cultural Landscape (DTCCL).

Staff has also concluded that the GSEP would directly impact 6 prehistoric resources that are assumed eligible for the NRHP and the CRHR, but are not contributors to the PTNCL or the DTCCL.

In contrast, staff found that the integrity of setting and integrity of feeling of all known built-environment resources, recommended register-eligible and located within the GSEP's impact block, would not be significantly impacted and adversely affected by the erection of the GSEP.

Finally, staff concludes that the GSEP construction impacts, when combined with impacts from past, present, and reasonably foreseeable projects, contribute in a small but significant way to the cumulatively considerable adverse impacts for cultural resources at both the local I-10 Corridor and regional levels. While staff's **CUL-1** and **CUL-2** would reduce the cumulative impacts to the greatest extent possible, the impacts would still be cumulatively considerable.

A summary of the known register-eligible cultural resources staff has identified as subject to direct GSEP impacts are presented in **Cultural Resources Table 13**.

CULTURAL RESOURCES Table 13
NRHP- and CRHR-Eligible Known Cultural Resources Subject to Direct Project Impacts

Resource	Resource Description	CRHR Eligibility
Cultural Landscapes		
DTC/C-AMA Cultural Landscape	World War II era Refuse Scatters and Features: includes 14 historic-period sites, 1 dual component site, and 1 unknown site listed below. Other contributors outside of GSEP PAAs .	Assumed Eligible
Prehistoric Trails Network Cultural Landscape	Prehistoric Trails and associated sites: Includes 248 sites in the GSEP ethnographic PAA including McCoy Spring National Register District (CA-Riv-0132), and 6 sites listed below. Other contributors outside of GSEP PAAs.	Assumed Eligible
Prehistoric Archaeo-logical Resources		
CA-Riv-0260	Temporary Camp: 62 acres, artifacts (n=1000+), features. PTNCL contributor.	Eligible
CA-Riv-0663	Temporary Camp: 186 acres, artifacts (n=1000+), features. PTNCL contributor.	Eligible
CA-Riv-9072	Temporary Camp: 350 acres, artifacts (n=1000+), features. Rose Spring projectile point (AD 200 to 1100). PTNCL contributor.	Eligible
CA-Riv-9084	Artifact Scatter: 17 acres, artifacts (n=96), lithics, ground stone, 1 marine shell, and 1 Olivella shell bead (1100 cal AD to Contact).	Assumed Eligible
CA-Riv-9209	Artifact Scatter: 2 acres, artifacts (n=24), 7 debitage, 4 ground stone fragments, 1 core.	Assumed Eligible
CA-Riv-9215	Artifact Scatter: 3.6 acres, artifacts (n=25), 10 debitage, 1 projectile point (no ID).	Assumed Eligible
CA-Riv-9216	Artifact Scatter: 4 acres, near lake shore, 2 concentrations, artifacts (n=45), lithics, groundstone.	Assumed Eligible
CA-Riv-9220	Artifact Scatter: 9.4 acres, artifacts (n=94), lithics, 1 projectile point tip, 1 Cottonwood leaf-shaped projectile point, 1 metate fragment.	Assumed Eligible
CA-Riv-9223	Lithic Scatter: 1 acre, debitage (n=20).	Assumed Eligible
CA-Riv-9227	Artifact Scatter: 3 acres, artifacts (n=18), pot drop brownware sherds (n=14), 1 marine shell fragment. Possible PTNCL contributor.	Assumed Eligible
CA-Riv-9249	Ceramic Scatter: 1 acre, brownware sherds (n=21), pot drop. Possible PTNCL contributor.	Assumed Eligible
CA-Riv-9255	Artifact Scatter: 1.7 acres, artifacts (n=40), 1 concentration, brownware pot drop (n=10), FAR, groundstone. Possible PTNCL contributor.	Assumed Eligible
Historical Archaeo-logical Resources		
P33-13598	Refuse Scatter: 0.04 acres, cans (n=8). Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9063H	Refuse Scatter: 1.22 acres, artifacts (n=15). Possible contributor to DTCCL.	Assumed Eligible

Resource	Resource Description	CRHR Eligibility
CA-Riv-9203H	Refuse Scatter: 5.2 acres, artifacts (n=84), food and beverage cans, can fragments, glass bottles, and plastic. Dual component? Post 1950? Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9204H	Refuse Scatter: 1 acre, cans and bottles (1932-1953). Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9211H	Refuse Scatter: 0.2 acres, cans and glass bottles, 1934 penny. Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9213H	Refuse Scatter: 2 acres, (n=60) cans. Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9214H	Refuse Scatter: 0.7 acres, (n=10) cans. Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9228H	Refuse Scatter: 0.06 acres, 10 cans, bottle base (1938-1951), bottle base (1916-1931), razor blade, glass fragments. Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9245H	Refuse Scatter: 3.3 acres, (n=14), cans, thermos, flare. Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9251H	Refuse Scatter: 0.2 acres, (n=9) cans, machine gun cartridges, pocket knife, bailing wire. Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9254H	Refuse Scatter: 0.6 acres, (n=21) cans. Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9258H	Refuse Scatter: 2.3 acres, (n=150+) cans, glass bottles, machine gun cartridges, 5 artifact concentrations. Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9259H	Feature: 0.3 acres, 2 stake alignments. Possible contributor to DTCCL.	Assumed Eligible
Dual-Component Resources		
CA-Riv-9205H	Refuse Scatter/Lithic Scatter: 1 acre, Prehistoric (n=8) lithics and groundstone. Historic (n=100+) cans, glass (post 1945), auto parts (1930-1940). Possible contributor to DTCCL.	Assumed Eligible
Unknown		
CA-Riv-0259 (P33-00259) Or (P33-13656)	Features: 1 acre, Prehistoric rock rings or WWII era foxholes with refuse scatter? 2004 visit suggests this site is a possible contributor to DTCCL.	Assumed Eligible
Built-Environment Resources		
No Number	Blythe-Eagle Mountain Transmission Line	Not Eligible
No Number	Wiley's Well Road	Eligible

The applicant's and staff's recommended mitigation measures for GSEP's construction impacts to NRHP-eligible and CRHR-eligible resources are discussed in detail below.

C.3.6.3 OPERATION IMPACTS AND MITIGATION

With respect to direct impacts, if, during operation of the GSEP, the project owner should plan any changes or additions entailing significant amounts of ground disturbance, the project owner would have to petition the Energy Commission to review the environmental impacts of those activities and approve the plan. Cultural resources staff would then determine if previously undisturbed sediments would be affected by the planned activities and, if so, recommend the application of existing conditions or devise new ones to mitigate any impacts to significant known or newly identified cultural

resources. Consequently, at this time staff has recommended no conditions of certification addressing operation direct impacts.

For indirect impacts, however, during operation of the GSEP, cultural resources on and in the immediate vicinity of the project site may experience increased vandalism, illegal collection of artifacts, and/or destruction of resources by vehicles traveling on the site, as a result of improved access due to the project's construction. For known sites adjacent to the GSEP boundaries, staff has recommended conditions of certification to mitigate these potential impacts in **CUL-13** and **CUL-14**. **CUL-13** requires that the project owner mark the boundary around each adjacent site, including a buffer zone, and then set aside each bounded area as an environmentally sensitive area that would not be subject to disturbance during the life of the project. **CUL-14** requires a surface collection be done in each adjacent site. All diagnostic artifacts and features must be mapped using the latest technology with sub-meter accuracy, such as UTM 11 North or California Teale Albers. The CRRMP will include a detailed discussion of the specific equipment and methods used. In particular, any post-processing of the data will be described. The artifacts will be collected and curated.

C.3.6.4 PROJECT CLOSURE AND DECOMMISSIONING IMPACTS AND MITIGATION

Cultural resources within the proposed GSEP site footprint and linear facilities corridor are most likely present within the first 2 feet below the current ground surface (see "Present Process Geomorphology" and "Results of Geoarchaeological Investigations" subsections, above).The construction of GSEP is expected to destroy all known and unknown cultural resources within the site footprint and most of the linear facilities corridor. Therefore the closure and decommissioning of the proposed project is unlikely to cause additional impacts to known or previously unknown cultural resources. However, sites within the linear facilities corridor and near the boundary of the proposed project footprint may still exist after GSEP construction and associated archaeological data recovery. These sites could be impacted by activities associated with project closure and decommissioning.

As for any changes or additions to the GSEP during operation, as discussed above, the project owner, prior to any decommissioning activities, would petition the Energy Commission to review and approve a decommissioning plan, and cultural resources staff would then determine if previously undisturbed sites or sediments would be affected by the decommissioning. If so, staff could then recommend conditions to mitigate any decommissioning impacts to significant known or newly identified cultural resources. Consequently, at this time staff has recommended no conditions of certification addressing decommissioning impacts.

C.3.6.5 CUMULATIVE IMPACTS AND MITIGATION

This section evaluates the potential for GSEP, and other solar and development projects within the vicinity of GSEP, to have cumulative impacts to cultural resources. As discussed previously, individually minor but collectively significant actions (usually in the form of ground disturbance) may have a cumulatively considerable impact on cultural resources. These impacts may result in a substantially adverse change in the

significance of a resource, potentially jeopardizing its eligibility for listing on the NRHP and CRHR.

For the cultural resources cumulative analysis, the regional scope was defined at two levels: local and regional. At the local level, the geographic area considered for cumulative impacts on cultural resources is a loosely defined area on either side of I-10 between Desert Center and Blythe in eastern Riverside County, hereafter referred to as the I-10 Corridor. This corridor overlaps to a large extent with BLM's California Desert Conservation Area. The Corridor does not have strictly defined boundaries, and therefore does not have an area. However, the area is broadly equivalent to a 4-mile-wide strip (2 miles to either side of I-10) and 48 miles long, between Blythe and Desert Center **(Cumulative Impacts Figure 2)**. The area of this strip is 192 square miles (122,440 acres).

Although the total number of cultural resources present in this area is unknown, a rough order of magnitude estimate can be derived (see **Cultural Resources Table 14**) based on recent surveys related to three proposed solar power projects (Genesis Solar Energy Project, Palen Solar Power Project and Blythe Solar Power Project) which surveyed a total of 19,184 acres. These projects recorded 329 sites, indicating that the Corridor has an average site density of 0.017 cultural resources per acre, and 0.003 potentially eligible resources per acre. This figure suggests that the Corridor originally contained approximately 2,081 cultural resources, 367 of which may have been eligible for the NRHP and the CRHR.

CULTURAL RESOURCES Table 14
Cumulative Analysis Results: Estimated Number of Cultural Resources Per Acre

Location	Acres	Number of Known Cultural Resources	Number of Potentially Eligible Cultural Resources
Genesis PAAs Blythe PAAs Palen PAAs	19,184	329 = Average Density of 0.017 sites per acre	58 = Average Density of 0.003 sites per acre
		Estimated Number of Cultural Resources (Acres x 0.017)	**Estimated Number of Potentially Eligible Cultural Resources (Acres x 0.003)**
I-10 Corridor	122, 440	2, 081	367
Southern California Desert Region	11,000,000	187,000	33,000
Existing Projects I-10 Corridor			
Chuckwalla Valley Prison and Ironwood Prison	1,720	29	5
I-10 Freeway	2,328	40	7
Devers-Palo Verde 1 Transmission Line	350	6	1
Kaiser Eagle Mountain Mine	3,500	59	10
Subtotal	7,898	133	23
Reasonably Foreseeable Future Projects I-10 Corridor			
13 Solar Projects and Chuckwalla Raceway	47,591	809	143
4 New Transmission Lines	465	17	1
Subtotal	48,056	816	144
Reasonably Foreseeable Future Projects Southern California Desert Region			
Solar Projects	567,882	9,654	1,704
Wind Projects	433,721	7,373	1,301
Subtotal	1,001,606	17,027	3,005

At the regional level, the geographic area considered for cumulative impacts on cultural resources is defined as the desert areas of southeastern California, southern Nevada, and western Arizona, as shown on **Cumulative Impacts Figure 1** (Regional Renewable Applications). In broad terms, the area covered in this analysis includes the 25-million-acre California Desert Conservation Area. Unlike other parts of California that were more densely occupied in prehistory, little is known about the cultural resources of the desert region examined for this cumulative study. According to the CHRIS only 20 percent of Riverside and San Bernardino counties have been surveyed for cultural

resources. These studies have resulted in the identification and documentation of more than 20,000 cultural resources. These results suggest that there is a high potential to discover previously unknown resources within the cumulative study region.

A detailed discussion of the cumulative project impacts on all environmental resources was provided in Section B.3. To review, this cumulative analysis for the proposed project was based upon:

- Renewable energy projects on BLM, state, and private lands, as shown on **Cumulative Figure 1** and in **Cumulative Tables 1A and 1B**. Although not all of those projects are expected to complete the environmental review processes, or be funded and constructed, the list is indicative of the large number of renewable projects currently proposed in California.
- Foreseeable future projects in the immediate vicinity of the I-10 Corridor Area, as shown on **Cumulative Impacts Figure 2**, I-10 Corridor Existing and Future/Foreseeable Projects, and **Cumulative Tables 2 and 3**. Table 2 presents existing projects in this area and Table 3 presents future foreseeable projects in the I-10 Corridor Area. Both tables indicate project name and project type, its location and its status.

Impacts of Existing Projects

Cultural resources staff's analysis of cumulative impacts of existing projects emphasized those projects and developments listed in **Cumulative Table 2** that are expansive and have disturbed the most acreage. Many of these projects were completed prior to the existence or regular enforcement of state and federal cultural resource laws. As such, the actual number of cultural resources within each project area and the number of resources destroyed by the project, is unknown. The following calculations are estimates.

I-10 Corridor

At the regional level, the construction of Chuckwalla Valley and Ironwood State Prisons probably caused the most disturbance in the Corridor. Together these projects have disturbed approximately 1,720 acres of culturally sensitive desert. This cumulative analysis suggests that 29 sites were destroyed during this project, 5 of which may have been eligible for the NHRP and the CRHR.

The construction of I-10, a four-lane divided highway, with associated bridges, off-ramps, and berm system, also resulted in significant ground disturbance in the Corridor. Assuming a width of a minimum of 200 feet and a length of 48 miles, within the I-10 Corridor this project disturbed approximately 10,137,600 square feet (2,328 acres). This analysis suggests that 40 sites were destroyed during this construction, 7 of which were eligible for the NHRP and the CRHR.

Another linear project within the Corridor was the Devers-Palo Verde Transmission Line, a 500-kV transmission line paralleling I-10. The disturbance caused by the construction of transmission lines is generally less than the disturbance caused by freeway construction. However, each line has an associated access road. Based on the construction of the access road and excluding the transmission tower pads, a width of

20 feet for each project and a length of 48 miles was assumed for this analysis. A similar calculation was made for the Blythe-Eagle Mountain Transmission Line and a natural gas line, both of which were constructed parallel to I-10. This analysis estimates that during the construction of these three linear projects, approximately 350 acres were disturbed, and 6 cultural resources were destroyed, 1 of which was likely to be eligible for the NHRP and the CRHR.

Finally, the mining activities at the Kaiser Eagle Mountain Mine may have disturbed more than 3,500 acres. Several plans for the use of this disturbed area have been proposed, but, from the perspective of cultural resources, new projects would be unlikely to cause more damage than has already occurred.

In total, together, the larger of the ground-disturbing projects within the I-10 Corridor disturbed at least 7,898 acres, or 6.4 percent of the Corridor. One hundred and thirty-three of the estimated 2,081 cultural resources were likely destroyed by these projects. Of the 367 cultural resources that would have been eligible for the NHRP and the CRHR, 23 would have been destroyed. Overall, previous projects in the I-10 Corridor do not appear to have a significant adverse affect on the cultural resources. However, certain site types, particularly those associated with dry lakes may have been disproportionately affected. A more detailed cumulative analysis would be needed to determine if this was the case.

Southern California Desert Region

Within the larger Southern California Desert Region, the most intensive use of the desert and concomitant disturbance of cultural resources has been on designated military installations (e.g., Edwards Air Force Base, Fort Irwin, Twentynine Palms Marine Corps Base, Chocolate Mountain Naval Aerial Gunnery Range) (**Cumulative Impacts Figure 1**) during Gen. Patton's military training from 1942 to 1944, and during later training maneuvers in May, 1964, throughout the I-10 Corridor.

Cultural resources in the Southern California Desert Region have been primarily impacted by past and currently approved projects through the ground disturbance that is required for construction of buildings, facilities, roads, and other infrastructure. Military training operations have been the most destructive, particularly at bombing ranges.

In the case of military installations and maneuvers, however, avoidance of substantial adverse changes to CRHR- and NRHP-eligible cultural resources has been accomplished through deliberate project planning. Likewise, the severity of impacts to previously unknown cultural resources have been reduced to less-than-significant by implementing mitigation measures requiring construction monitoring, evaluation of resources discovered during monitoring, and avoidance or data recovery for resources evaluated to be CRHR-eligible.

Some of the physical evidence of military training exercises at the regional level are at least 50 years old and are therefore potentially CRHR- and NRHP-eligible cultural resources. This is particularly the case for historic-period cultural resources associated with the DTCCL described in detail in previous subsections. The use of heavy equipment and vehicles and the construction of camps, bunkers, and other features

throughout the desert undoubtedly destroyed a number of prehistoric sites. In their place, we have a potential historic military district, with many individual resources that are known to be, or have the potential to be CRHR- or NRHP-eligible. Previous development within the region has already destroyed a number of DTCCL sites.

Impacts of Reasonably Foreseeable Future Projects

Cultural resources are also expected to be affected by the following reasonably foreseeable future projects. As detailed in **Cumulative Impacts Table 3** and shown in **Cumulative Impacts Figure 1**, the future construction of residences and infrastructure in the local and regional cumulative analysis study areas will undoubtedly result in impacts to cultural resources. Undoubtedly, some of the projects included in this analysis will not be built. This analysis estimates the maximum number of cultural resources that may be destroyed.

I-10 Corridor

Numerous other projects are proposed and under consideration along the I-10 Corridor. Staff assumes that the 13 proposed solar projects and Chuckwalla Raceway project would destroy all of the cultural resources within the proposed project limits for the purposes of this cumulative analysis. As discussed above, transmission lines are considered to have a smaller effect on cultural resources. Using the same conservative figures used previously, the 4 new transmission lines proposed for the I-10 Corridor would affect an area 20 feet wide and 48 miles long for each project. In total these linear projects would disturb 465 acres.

Together these reasonably foreseeable future projects would disturb 48,056 acres, or 39 percent of the total I-10 Corridor. This cumulative analysis suggests that these projects would destroy 816 cultural resources, 144 of which were CRHR- and NRHP-eligible.

Southern California Desert Region

Much of the Southern California Desert Region analyzed for this cumulative analysis consists of the California Desert Conservation Area (CDCA). Eleven million acres of the 25-million-acre CDCA is managed by the BLM. Although there are undoubtedly other projects that have been proposed for this region, the projects proposed for construction within the BLM California Desert District make a reasonable proxy for patterns across the large area. Solar projects occupying 567,882 acres and wind projects occupying 433,721 acres have been proposed for this region, consisting of nearly 4percent of CDCA.

Although the cultural resources density per acre is unknown for this entire region, the density proposed for the I-10 Corridor serves as a reasonable minimum. The disturbance of 1 million acres would result in the destruction of at least 17,000 cultural resources, 3,000 of which were CRHR- and NRHP-eligible. If all of this construction took place, the majority of the projects would undergo CEQA and/or NEPA review. Cultural resources that could not be avoided would be tested to evaluate significance, and significant sites would be subject to historical documentation or data recovery excavations to mitigate impacts. Although these measures would reduce most individual site impacts to less-than-significant levels, archaeological excavation and analysis

cannot recover all the scientific values of a site. Based on the above, the cumulative loss of approximately 17,000 cultural resources is considered a significant impact that cannot be mitigated to less-than-significant levels.

Construction of the solar and wind projects proposed throughout this region would result in substantial changes in the setting, feeling, and association of the areas in which they are constructed. These kinds of damages may be especially severe for traditional use areas and traditional cultural properties. Potential impacts would include direct impacts in the form of physical disturbance or alteration as a result of construction activity or indirect impacts in the form of diminished visual character of traditional use areas due to the presence of industrial structures.

Contribution of the Genesis Solar Energy Project to Cumulative Impacts

The development of the GSEP is expected to result in permanent adverse impacts to cultural resources related to construction activities. However, these impacts would be expected to contribute only a small amount to the possible permanent cumulative impacts related to cultural resources because relatively few resources may be eligible for the CRHR or NRHP. GSEP would have a significant direct impact on 27 historically significant archaeological resources and significant indirect impact on 248 contributors to one of the two historically significant cultural landscapes identified as present in the GSEP region. These impacts include direct impacts to 6 prehistoric-to-historic-period Native American archaeological sites; direct impacts to 6 and indirect impacts to 248 prehistoric-to-historic-period Native American archaeological sites that are potential contributing elements of the PTNCL; and direct impacts to 15 sites that are potential contributing elements of the DTCCL.

If the proposed conditions of certification **CUL-1** through **CUL-17** are properly implemented, the proposed GSEP would result in a less-than-significant impact on known and newly found archaeological resources, including the PTNCL and the DTCCL. However, the indirect impacts to the ethnographic aspects of the 248 potential contributing elements to the PTNCL have not yet been determined. These impacts and the necessary mitigation measures must be determined by the BLM through consultation with Native American groups in the Section 106 process and formalized in a PA.

The GSEP construction impacts, when combined with impacts from past, present, and reasonably foreseeable projects, contribute in a small but significant way to the cumulatively considerable adverse impacts for cultural resources at both the local I-10 Corridor and regional levels. This analysis estimates that more than 800 sites within the I-10 Corridor, and 17,000 sites within the Southern California Desert Region, will potentially be destroyed. Mitigation can reduce the impact of this destruction, but not to a less-than-significant level.

Staff acknowledges that this is an unusual conclusion. The reason these cumulative impacts cannot be mitigated to a less-than-significant level is because these resources will be changed permanently. Unlike biological resources, a cultural resource cannot recover. Significant direct physical impacts to cultural resources often result in the

complete destruction of the resource. Mitigation of some of these impacts involves the collection of information or “data recovery”. This analysis and interpretation of the data collected through archaeology teaches us about the lives of historic people. This knowledge of American history enriches the lives of the general public. Therefore, although an important resource is lost forever, some of the information about that resource is retained. This allows us to argue that these significant impacts can be mitigated. However, although mitigation measures can reduce many individual site impacts to less-than-significant levels, archaeological excavation and analysis cannot recover all the scientific values of a site.

As an inherently destructive science, archaeology must walk a fine line between destruction and preservation. Some questions about the lives of people in the past can only be answered through excavation, which results in the destruction of the site excavated. But archaeological techniques improve rapidly, increasing the amount of information we might gather dramatically. Portions of sites must be preserved so they can be analyzed using these future, as-yet undeveloped, techniques.

No professionally agreed-upon limits for this balance between destruction and preservation exist. General professional archaeological opinion considers the proportion of certain site types that still exist when determining the cumulative impacts and possible public benefits of a project. If only a few such sites still exist undisturbed, then their destruction would be considered a significant impact that cannot be mitigated to less-than-significant levels. General professional opinion also considers the constant ground disturbance associated with modern development to have a devastating cumulatively considerable effect on cultural resources. Indeed, at some point in the near future all prehistoric resources may be destroyed; a kind of cultural resource extinction.

It is both politically and professionally difficult for archaeologists to point out these patterns. So, although these cultural resources trends are well known in the profession, they have rarely resulted in CEQA and NEPA documents where impacts have been considered cumulatively considerable and impossible to mitigate to less-than-significant levels, even though it would have been appropriate.

Summary of Cumulative Impacts

The GSEP impacts, when combined with impacts from past, present, and reasonably foreseeable projects, contribute in a small but significant way to the cumulatively considerable adverse impacts for cultural resources at both the local I-10 Corridor and regional levels.

The majority of the proposed future projects examined in this analysis would likely undergo CEQA and/or NEPA review. Sites that could not be avoided would be tested to evaluate significance. Register-eligible sites would be subject to historical documentation or data recovery excavations to mitigate impacts. Although these measures would reduce most individual site impacts to less than significant levels, archaeological excavation and analysis cannot recover all the scientific values of a site.

This analysis estimates that more than 800 sites within the I-10 Corridor, and 17,000 sites within the Southern California Desert Region, will potentially be destroyed. The

destruction of cultural resources and cultural landscapes results in the loss of information, but also to irreparable damage to cultural and spiritual values. In terms of the loss of information mitigation can reduce the impact of this destruction, but not to a less-than-significant level. In terms of cultural and spiritual impacts, the nature of these impacts and potential mitigation measures can only be determined by members of the community who value the resources and landscapes, in this case Native Americans. Because only they can suggest possible mitigation, if any, this cumulatively considerable impact may be unmitigatable.

To reduce as much as possible the region-wide, significant cumulative impact that staff has identified from its analysis, staff recommends that GSEP be required to contribute to the funds established to document and nominate, to the NRHP, if appropriate, the PTNCL and the DTCCL (**CUL-1** and **CUL-2**).

Despite the correct implementation of the mitigation measures outlined here, GSEP's incremental contribution to cumulative impacts to cultural resources would nonetheless be cumulatively considerable. Staff acknowledges that this is an unusual conclusion when compared to previous CEQA documents.

C.3.6.6 APPLICANT'S RECOMMENDED MITIGATION MEASURES

Tetra Tech provided recommendations for mitigation in their revised survey report (Farmer et al. 2009, p. 88). They found that four of the cultural resources within the GSEP PAAs—CA-RIV-0663, CA-Riv-9255, CA-RIV-9072, and CA-RIV-9224H—are potentially eligible for the NRHP under Criterion D. They recommend that test excavation programs be conducted at these four sites in order to mitigate potential adverse impacts. If any of these sites should prove to have extensive buried deposits they recommend that the project could be redesigned to avoid the site or that suitable data recovery measures could be taken. Further details of these data recovery measures were not provided.

Despite being informed in writing by the Energy Commission and BLM that some of the GSEP sites were considered eligible for the NRHP and the CRHR as contributors to either the PTNCL or DTCCL, Tetra Tech did not discuss these issues in their revised reports. Instead Tetra Tech concluded that the remaining archaeological sites appear to be of an ephemeral nature and/or have been disturbed by sheet erosion.

C.3.6.7 ENERGY COMMISSION-RECOMMENDED MITIGATION OF SIGNIFICANT IMPACTS

BLM cultural resources staff is in the process of making evaluations of those cultural resources that GSEP could impact. BLM staff at this time is also in the process of formal consultation under NRHP Section 106 to develop a Programmatic Agreement (PA), as allowed under 36 CFR § 800.14(b). PAs are used for the resolution of adverse effects for complex project situations and when effects on resources eligible for or listed in the NRHP cannot be fully determined prior to approval of an undertaking.

As a result of the anticipated significant effects of the proposed action on cultural resources and the large geographic extent of the GSEP area of potential effects, BLM staff is preparing a PA in consultation with the Advisory Council on Historic

Preservation, the State Historic Preservation Officer, the Energy Commission, interested Native American groups, (including tribal governments as part of government-to-government consultation) and the public at large. The PA will govern the conclusion of the identification and evaluation of cultural resources subject to GSEP impacts, as well as the resolution of any significant effects on historic properties (significant prehistoric and historic cultural resources, as determined by BLM staff) that may result from the proposed or alternative project construction and operation activities. Treatment plans for historic properties that cannot be avoided by project construction will also be developed in consultation with stakeholders, as stipulated in the PA.

The final version of the GSEP PA will be executed no later than the BLM's signing of the Record of Decision for the Right-of-Way grant for the project. When the PA is executed and fully implemented, BLM will have fulfilled the requirements of NEPA and Section 106 of the NHPA.

The mitigation measures that Energy Commission staff recommends below reflect staff's assessment of what constitutes appropriate mitigation, under CEQA, for GSEP's identified impacts to register-eligible cultural resources. Staff recommends that the BLM adopt comparable mitigation in the Historic Property Treatment Plan, a document associated with the BLM's GSEP PA, in order to ensure that the project's impacts to cultural resources are mitigated in a way that meets both federal and state requirements.

GSEP is the first of a series of large energy projects proposed for the southern California Desert to near the end of the Energy Commission's permitting process. Many things have been unusual about these projects. For cultural resources some of the important differences have included the high speed of the permitting process, the large size of the project areas, the small amount of information regarding the cultural resources in the region, and the large number of future or concurrent projects proposed for the area overall. These factors have influenced the way the Energy Commission cultural resources staff has strategized the recommended mitigation of significant impacts for projects in the southern California Desert.

Mitigating project impacts to cultural resources to a less-than-significant level is generally couched in terms of recovering data that would be lost when the resources are destroyed. A loss of a CRHR-eligible cultural resource is assumed to be a loss to the public of valuable information about the past. For the successful mitigation of a lost built-environment resource, the recovered data must stand in place of the lost resource. For the successful mitigation of an archaeological resource, the recovered data must be pertinent to answering questions important in history or prehistory. For built-environment resources, data recovery can entail detailed recordation of all aspects of the physical structure of the resource and documentation of it from historical resources. Archaeological sites are methodically excavated, deposits recorded and photographed, artifacts identified and dated, and samples of various materials are scientifically analyzed. Data recovery as a mode of mitigating impacts to a traditional cultural property (TCP) to a less-than-significant level is more problematic and may not be possible or appropriate. Mitigation of impacts to a TCP must be determined with the input of the group that values it, on a case-by-case basis.

For the purposes of recommending mitigation of GSEP impacts to cultural resources that is adequate for CEQA, under the present modification of the approach staff employed for the SA/DEIS, staff applies performance standards in three contexts with respect to archaeological sites:

1. Adequacy of the applicant's or owner's cultural resources consultant's evaluation-phase field work (for Phase II discussion, see "Approaches to CRHR Eligibility Evaluations," above);

2. Qualification of the resource for either the CRHR or NRHP (for criteria, see "Determining the Historical Significance of Cultural Resources," above); and

3. Adequacy of the applicant's or owner's cultural resources consultant's data recovery phase field work (Phase III discussion, see "Approaches to CRHR Eligibility Evaluations," above).

The performance standards staff applies to the adequacy of evaluation-phase field work include acquisition of complete and accurate data that:

- Documents the horizontal and vertical extent of the site;
- Documents homogeneity vs. heterogeneity in material culture;
- Documents homogeneity vs. heterogeneity in the differential distribution of the material culture;
- Documents the depositional character of the sediments in the deposits and the differential distribution of the sediments of the deposits;
- Documents the integrity of the deposits and the associations among the sediments and the artifacts; and
- Documents site taphonomy (contemporaneous and post-depositional forces affecting site structure).

The performance standards for determining resource eligibility are the criteria under which a cultural resource qualifies for inclusion in the CRHR and are presented above, in the subsection headed, "Determining the Historical Significance of Cultural Resources."

The performance standards staff applies to the adequacy of data-recovery-phase field work include acquisition of a statistically significant sample of the full range of data sets pertinent to the questions about history or prehistory that the site holds and that make the site CRHR-eligible

These three sets of performance standards are expressed and detailed in staff's recommended conditions of certification. Staff's performance standards are manifested in various ways in the conditions of certification. Required approval of staff for project-proposed personnel and for various research plans will result in staff's performance standards for both evaluation-phase and data-recovery-phase adequacy. Specific field methods are required that will also result in meeting staff's performance standards for both evaluation-phase and data-recovery-phase adequacy. Required consultation with

staff by the applicant's or owner's cultural resources consultants will result in the performance standards for resource eligibility (e.g., does a resource qualify for the CRHR) being met.

If the applicant's or owner's cultural resources consultants meet staff's performance standards, as detailed in the cultural resources conditions of certification, then significant impacts to cultural resources would be reduced to a less-than-significant level through a program of data recovery, resource registration, and public outreach, and the loss to the public of the values inherent in these resources would be adequately mitigated.

Staff's Recommended Conditions of Certification

Staff has concluded that it can best fulfill its responsibilities under CEQA by designing dual-level strategies to mitigate cumulative impacts on the regional level and project-specific direct and indirect impacts on the project level. For the region-wide mitigation of cumulative impacts, rather than hiring multiple companies to produce reports in isolation from each other, with results that are difficult to compare and synthesize, staff's recommended mitigation, coordinated among three projects to start, will standardize terminologies, increase statistical sample sizes, and focus research questions. Staff thinks this will improve the quality and utility of the information collected, as well as save money and time for all involved. Energy Commission staff will save time by creating overarching mitigation measures that will serve for the present projects and be adaptable to later projects in the same region, leaving staff more time to focus on the unique resources specific to each individual project and PAA. A more regional approach is also an advantage for BLM, since they manage this land at a regional scale. In discussions about the PAs that BLM is developing, a representative of the state Office of Historic Preservation has stated repeatedly that the Office would like to see a landscape approach to the cultural resources of the region. Staff sees regional mitigation as an advantage for the project owners as well, as it will allow the pooling of their resources, thereby reducing their overall cultural resources impact mitigation costs.

To start, staff intends to coordinate the cultural resources mitigation of the shared cumulative impacts of three solar projects proposed by NextEra and Solar Millennium for areas north of the I-10 corridor between Blythe and Desert Center: Genesis Solar Energy Project, Blythe Solar Power Project, and Palen Solar Power Project. If this coordination proves successful, staff intends to expand the number of projects and project owners involved as they enter the permitting process. The three initial projects share two broad types of cultural resources: prehistoric trails and destination sites associated with the PTNCL and historical military training sites associated with the DTCCL (defined in detail above). Seventy-five percent or more of the sites that will be impacted by these three projects are potential contributing elements to these two NRHP- and CRHR-eligible landscapes. At the time of the publication of this document, staff has identified only two shared landscapes which will structure the coordinated cultural resources mitigation for these three projects. Other landscapes or themes may be identified later and incorporated by future project owners as appropriate.

Practically speaking, what staff recommends is shared staffing of the recommended regional-level cultural resources mitigation of cumulative impacts, and, necessarily,

shared funding of this staffing. Staff recommends five cultural resources specialists to be shared by the three solar projects: PTNCL Principal Investigator(PI)-Prehistoric Archaeologist, PTNCL Ethnographer, PTNCL Ethnohistorian, DTCCL Principal Investigator(PI)-Historian and DTCCL Historical Archaeologist. All five specialists would be senior professionals in their subfield, qualified according to the Secretary of the Interior's Standards, acknowledged experts in the Southern California Desert region, and have demonstrated experience in synthetic writing. The PTNCL PI-Prehistoric Archaeologist and the DTCCL PI-Historian would also have to have large-scale project management experience.

Compensation for these specialists and the costs for their expenses and deliverables would be divided among the project owners in direct proportion to the number of acres each project would enclose or otherwise disturb. Staff feels that the number of acres disturbed is the most equitable measure of impacts to cultural resources for all three projects. Each project area has a different relative density of archaeological sites, but the number of buried archaeological sites for each is unknown. So the site counts may change dramatically and unexpectedly during future archaeological exploration and construction. In addition, the nature of direct and indirect impacts to regional ethnographic resources in the PTNCL has not yet been determined by local Native American community members. Given the sacred nature of these landscapes, places potentially as important as Mount Sinai, where the Ten Commandments were given to Moses, some of these impacts may be considered severe and difficult or impossible to mitigate to less-than-significant levels.

Considering these unknown and unquantifiable factors, staff considers the number of acres disturbed by each project to be a reasonable and concrete proxy. Conditions of Certification **CUL-1** and **CUL-2** require the GSEP project owner to contribute $35 per acre for the PTNCL and $25 per acre for the DTCCL to a special Energy Commission fund to finance the documentation and possible NRHP nomination of the PTNCL and DTCCL. Staff arrived at these amounts by estimating what the cost of each program would be, including overhead costs ($400,000 for the PTNCL, $300,000 for the DTCCL), dividing that by the total number of acres the projects together would disturb or enclose (1,890 for GSEP, 7,030 for Blythe Solar Power Plant, and 2,970 for Palen Solar Power Plant; total=11,890), and rounding to the nearest $5.00.

Staff is recommending identical conditions for the project owners of the Blythe Solar Power Project, and the Palen Solar Power Project. Any additional coordination among project owners that can be negotiated, beyond that specified here, is welcomed and encouraged. Also, it is possible for applicants for all three projects to make their contributions to the PTNCL and DTCCL funds prior to certification so that the research on the two landscapes might begin as soon as possible and the preliminary results of that research that are specifically needed to conduct the required data recovery activities might be available when the projects are ready to initiate those activities and have BLM's approval to do so. Pre-certification contributions to the two funds would not affect a project's certification prospects in any way. The applicants making such contributions would do so, at their own risk, as a means of advantaging their schedule.

The two landscape documentation and possible nomination programs are also identical for the three projects. These programs are detailed below. Although staff at this time

does not have the details worked out, it is staff's intention to enable the sharing of costs for these two programs with future projects under Energy Commission jurisdiction that would contribute to the cumulative impacts to cultural resources in the region, and also with any contemporaneous and future projects not under Energy Commission jurisdiction that contribute to the cumulative impacts to cultural resources in the region.

Mitigation of Cumulative Impacts to Cultural Landscapes (CUL-1 and CUL-2)

PTNCL Documentation and Possible NRHP Nomination Program

Energy Commission staff will engage a prehistoric archaeologist to serve as the principal investigator (PI) and prehistoric archaeologist for the following research on the PTNCL. The PTNCL PI-Prehistoric Archaeologist must have the following qualifications:

1. At a minimum, an M.A. in anthropology, with a specialization in archaeology;

2. Education and training that meet the U.S. Secretary of the Interior's Professional Qualifications Standards for Prehistoric Archaeology, as published in Title 36, Code of Federal Regulations, part 61;

3. A background in anthropology and archaeology, with at least 10 years of full-time archaeological resources mitigation and field experience in Southern California;

4. Demonstrated ability to conduct and report on archaeological research; and

5. At least three years of full-time professional experience managing large cultural resources projects in California.

Staff is recommending identical conditions for the project owners of the Blythe Solar Power Project, and the Palen Solar Power Project. Any additional coordination among project owners that can be negotiated, beyond that specified here, is welcomed and encouraged. Also, applicants may make their contributions to the PTNCL and DTCCL funds prior to certification. This would allow staff to initiate the research on the two landscapes as soon as possible, so that the preliminary results of that research that would specifically be needed to conduct the required data recovery activities would be available when the projects are ready to initiate those activities and have the BLM's and the CPM's approval to do so. Pre-certification contributions to the two funds would not affect a project's certification prospects in any way. The applicants making such contributions would do so, at their own risk, as a means of advantaging their schedule.

Under **CUL-4** for each project, the project owners will provide to the PTNCL PI-Prehistoric Archaeologist, the PTNCL Ethnographer, the PTNCL Ethnohistorian, and the PTNCL Geoarchaeologist copies of the AFC, data responses, confidential cultural resources documents, and the Revised Staff Assessment (RSA) and RSA Errata for the project.

A. Ethnographic Study

The PTNCL PI-Prehistoric Archaeologist will obtain the services of an ethnographer to serve as the PTNCL Ethnographer. The PTNCL Ethnographer must meet the NPS standards for Anthropologist/Applied Ethnographer (GS-190, 11-12 or 13-15) and have

already-established, long-term relationships with Native American groups whose traditional territories are in or near the Chuckwalla Valley and Palo Verde Mesa. The PTNCL PI-Prehistoric Archaeologist will submit the resume of the proposed PTNCL Ethnographer to staff for review and approval and to the BLM Palm Springs Office archaeologist for review and comment.

The PTNCL PI-Prehistoric Archaeologist will direct the PTNCL Ethnographer to:

1. Develop an ethnographic context for the PTNCL from ethnohistoric and ethnographic records and sources;

2. Develop an informant list: The PTNCL Ethnographer has the final choice, but must include representatives from the groups that have expressed concerns about the projects: the Quechan Tribe, the Chemehuevi Reservation, the Cabazon Band of Mission Indians, the Aqua Caliente Band of Mission Indians, the San Mañuel Band of Mission Indians, the Twentynine Palms Band of Mission Indians, La Cuna de Aztlan Sacred Sites Protection Circle, the Fort Mojave Indian Tribe, and the Colorado River Indian Tribes. Other Native Americans identified by the BLM Palm Springs Field Office archaeologist will also be included;

3. Develop interview questions about the PTNCL and potential traditional cultural properties (TCPs);

4. Submit the draft ethnographic context, informant list, and interview questions to staff for review and approval and to the BLM Palm Springs archaeologist for review and comment;

5. Using the approved informant list and questions, interview local Native American community members about the landscape and pay each an honorarium for their participation, amount to be reviewed and approved by staff.;

6. Escort, at PTNCL fund expense, to important, probable, known PTNCL contributors, such as springs, petroglyph sites, geoglyphs, and major trail segments, those members who want to visit them to determine if the Blythe, Genesis, and Palen projects would have any significant effects, from the perspective of the Native Americans, and what options for mitigation the Native Americans consider available. Pay each an honorarium for their participation, amount to be reviewed and approved by staff;

7. Alternatively and/or as additionally, photograph or simulate the viewsheds from important PTNCL contributors, such as springs, petroglyph sites, geoglyphs, and major trail segments and show them to interested Native American community members to determine if the three projects would have any significant effects, from the perspective of the Native Americans, and what options for mitigation the Native Americans consider available. Pay each an honorarium for their participation, amount to be reviewed and approved by staff;

8. Compile location data on PTNCL elements from ethnographic information, draft a map showing all these elements, and draw a provisional boundary for the PTNCL from the ethnographic perspective, with written justification for the boundary.

9. Compile interview transcripts and draft preliminary conclusions identifying TCPS and providing Native Americans' assessment of project impacts on these TCPs and their recommendations for mitigation measures for these impacts, with photos and maps as appropriate;

10. Assist interested Native Americans in adding the TCPs to the NAHC Sacred Sites list;

11. Set up an opportunity for Native Americans to write about or be recorded relating their knowledge, experience, and perspective on the PTNCL. Pay each an honorarium for their participation, amount to be reviewed and approved by staff;

12. Collaborate with the GSEP Project Prehistoric Archaeologist and the GSEP Project Ethnographer to develop a monitoring plan for the PTNCL cultural resources subject to indirect GSEP construction impacts; and

13. Submit products of 1, 7, 8, and 9 to the PTNCL PI-Prehistoric Archaeologist.

The PTNCL PI-Prehistoric Archaeologist will provide products of 1, 7, and 8 to the three project CRSs.

The PTNCL PI-Prehistoric Archaeologist will provide the product of 9 to the BLM Palm Springs Field Office archaeologist.

The PTNCL PI-Prehistoric Archaeologist will submit the draft PTNCL ethnographic documentation to staff for review and approval and to the BLM Palm Springs Field Office archaeologist for review and comment.

The PI-Prehistoric Archaeologist will arrange for the donation of $20,000 from the PTNCL fund to the non-profit organization, the Cultural Conservancy, in support of the Salt Song Trail Project.

B. Ethnohistorical Study:

The PTNCL PI-Prehistoric Archaeologist will obtain the services of an ethnohistorian to serve as PTNCL Historian (PH). The PTNCL Ethnohistorian will meet the the U.S. Secretary of the Interior's Professional Qualifications Standards for Historian, with demonstrated experience in ethnohistory. The resume of the proposed PTNCL Ethnohistorian will be submitted to staff for review and approval.

The PTNCL PI-Prehistoric Archaeologist will direct the PTNCL Ethnohistorian to:

1. Develop an annotated bibliography to establish the context, themes, contributing resource types, period of significance, and boundaries for the PTNCL;

2. Write the context and define the themes, contributor resource types, and period of significance;

3. Compile a list of known contributors, with a description and individual map plot of each, and a PTNCL map showing all contributors;

4. Plot, describe, and justify the boundaries of the PTNCL from the ethnohistorical perspective; and

5. Submit products of 2, 3, and 4 to PTNCL PI-Prehistoric Archaeologist.

The PTNCL PI-Prehistoric Archaeologist will provide products of 2, 3, and 4 to the three project CRSs.

The PTNCL PI-Prehistoric Archaeologist will submit the draft PTNCL ethnohistorical documentation to staff for review and approval and to the BLM Palm Springs Field Office archaeologist for review and comment.

C. Geoarchaeological Study:

The PTNCL PI-Prehistoric Archaeologist will obtain the services of a geoarchaeologist to serve as PTNCL Geoarchaeologist (PG). The PG's training and background must meet the U.S. Secretary of Interior's Professional Qualifications Standards for Prehistoric Archaeology, as published in Title 36, Code of Federal Regulations, part 61, and show the completion of graduate-level coursework in geoarchaeology or Quaternary science. The resume of the proposed PG will be submitted to staff for review and approval.

The PTNCL PI-Prehistoric Archaeologist will direct the PG to:

1. Develop a geoarchaeological context, including reconstruction of the regional paleoenvironment, with lake fluctuations, over the past 14,000 years;

2. Compile a trans-regional landform map;

3. Correlate trans-regional sites types with landforms;

4. Assign known sites to landforms for all three projects;

5. Attempt to predict on the basis of 4 where in the Chuckwalla Valley and on the Palo Verde Mesa additional sites of the several types may be found;

6. Conduct field studies [none envisioned yet];

7. Monitor during construction; and

8. Submit products 1–4 to PI-Prehistoric Archaeologist.

The PTNCL PI-Prehistoric Archaeologist will provide products 1–4 to the three CRSs.

The PTNCL PI-Prehistoric Archaeologist will submit the draft PTNCL geoarchaeological documentation, the trans-regional landform map, the trans-regional correlation of site types to landforms to staff for review and approval and to the BLM Palm Springs Field Office archaeologist for review and comment.

D. Archaeological Study:

The PTNCL PI-Prehistoric Archaeologist will:

1. Synthesize the present state of knowledge of prehistory in the Chuckwalla Valley and Palo Verde Mesa and identify significant gaps in this knowledge, based on all pertinent literature, including published monographs and papers, unpublished reports in the files of the CHRIS and the BLM's Palm Springs Field Office, and on consultation with archaeologists actively conducting research in this region, particularly those based in academia;

2. Develop a comprehensive prehistoric context for the PTNCL;

3. From the prehistoric context and the literature synthesis, identify and describe the full range of archaeological resources known for the PTNCL and posit any additional resources that, while not known, are strongly suggested by the context and synthesis;

4. From the prehistoric context and the literature synthesis, formulate specific research questions
    a. To fill significant gaps in our knowledge of the prehistory of this area,
    b. Answerable with data from known archaeological resources, and
        i. Specify what kinds of resources have the relevant data
    c. To determine the presence or absence of additional archaeological resources not presently known but likely
        i. Specify the methods for making this determination.

5. Develop criteria for definitively attributing archaeological sites to the PTNCL based on archaeological traits;

6. Compile location data on known PTNCL archaeological elements, draft detailed GIS-based maps of trails and the various site types and their spatial distributions, and draw on a map a provisional boundary for the PTNCL from the archaeological perspective, with a written justification for the boundary;

7. In collaboration with the BLM Palm Springs Field Office, hire the GIS Technician of their choice to identify, digitize, and enter into the BLM's existing cultural resources GIS database, data related to all archaeological sites not in the database.

The PTNCL PI-Prehistoric Archaeologist will provide products of 1–6 to the three project CRSs.

The PTNCL PI-Prehistoric Archaeologist will submit the draft PTNCL prehistoric archaeological documentation to staff for review and approval and to the BLM Palm Springs Field Office archaeologist for review and comment.

E. Possible NRHP nomination of the PTNCL:

After all data recovery for the three projects is completed and reported, the PTNCL PI-Prehistoric Archaeologist will confer with the PTNCL Ethnographer and the PTNCL Ethnohistorian to decide if the PTNCL is eligible for the NRHP, and, if so, the three will collaborate on a NRHP nomination for the PTNCL under Criteria A and D. If the PTNCL PI-Prehistoric Archaeologist, the PTNCL Ethnographer, and the PTNCL Ethnohistorian agree that a PTNCL nomination is appropriate, the nomination will include:

1. Definition of resource;
2. PTNCL probable contributing resource types, known and as-yet-unknown
    a. trail segments and trail-related features (pot-drops, rock cairns, lithic scatters)
    b. features (hearths, other)
    c. springs
    d. resource areas and associated features (quarries, plant foods/materials)
    e. camps
    f. habitation areas
    g. burial areas
    h. petroglyphs (hunting blinds?)
    i. geoglyphs (sacred places?)
    j. other;
3. Prehistoric, ethnohistorical, and ethnographic background and context;
4. Justification of eligibility;
5. Period of significance and justification for POS;
6. Identification of contributors, map of archaeologically confirmed sites, and site descriptions of all;
7. Identify contributors as TCPs, with the permission of Native Americans, if the community representatives determine any of the contributors to be TCPs;
8. Definition of boundaries, with map depicting trail network and nodes, as identified through historical, ethnographic, and archaeological research; and
9. Provision for adding additional contributing resources to the district as further survey is done.

The PTNCL PI-Prehistoric Archaeologist will submit the draft nomination to staff for review and approval and to the BLM Palm Springs Field Office archaeologist for review and comment.

The PTNCL PI-Prehistoric Archaeologist will submit the staff-approved PTNCL NRHP nomination to the State Historical Resources Commission, to initiate the process of formal consideration by the Keeper of the National Register, and track and facilitate the review of the nomination to acceptance, including required revisions and additions, or final rejection.

If the PTNCL PI-Prehistoric Archaeologist, the PTNCL Ethnographer, and the PTNCL Ethnohistorian agree that a PTNCL nomination is not appropriate, the PTNCL PI-Prehistoric Archaeologist will write and submit to staff a summary of the evidence justifying that conclusion.

F. Management Plan and Information Dissemination:

The PTNCL PI-Prehistoric Archaeologist will set up some kind of BLM management status for the PTNCL (hopefully NRHP eligibility, but other status may be necessary):

1. For managing known, unimpacted resources, and

2. For adding further contributing resources to the district as further survey done.

The PTNCL PI-Prehistoric Archaeologist will consult with BLM to determine ways of implementing the mitigation measures, if any, proposed by Native Americans in Task A for indirect impacts to resources determined to qualify under Criterion A and located outside of the boundaries of the three projects.

The PTNCL PI-Prehistoric Archaeologist will collaborate with the PTNCL Ethnographer and the PTNCL Ehtnohistorian to prepare a research paper, interpreting the implications of the PTNCL data for our understanding of the prehistory of the Mojave Desert, and submit it to a peer-reviewed journal.

The PTNCL PI-Prehistoric Archaeologist will obtain the services of an exhibit preparer and direct the preparer to craft materials, such as an instruction module for use in local school districts and or a display for existing public interpretation venues at local museums, that interpret the PTNCL for the public, based on the data compiled by the PTNCL PI-Prehistoric Archaeologist, the PTNCL PE, and the PTNCL PH. The PTNCL PI-Prehistoric Archaeologist will arrange for the materials to be used and displayed.

DTCCL Documentation and Possible NRHP Nomination Program

The DTCCL program will have a historian for a principal investigator, who will collaborate with a historical archaeologist in the tasks of documenting and nominating the DTCCL to the NRHP. The DTCCL Historical Archaeologist will also train the individual project historical archaeologists and their crews in the accurate and consistent field identification and recording of historic-period artifacts, with an emphasis on those associated with the DTC/C-AMA. The funding for this program would utilize the

same mechanism and contribution basis as the above PTNCL fund, as provided in **CUL-2**.

Energy Commission staff will engage a historian to serve as the principal investigator (PI) and historian for the following research on the DTCCL. The DTCCL PI-Historian must have the following qualifications:

1. At a minimum, an M.A. in history, with a specialization in World War II military history.

2. Education and training that meet the U.S. Secretary of the Interior's Professional Qualifications Standards for Historian, as published in Title 36, Code of Federal Regulations, part 61;

3. Demonstrated ability to conduct and report on historical research; and

4. At least three years of full-time professional experience managing research projects.

The DTCCL PI-Historian will propose and engage the DTCCL Historical Archaeologist, manage and coordinate the research activities required in this condition, report on progress to staff, and complete Task A. Staff will have final decisionmaking authority regarding budget and technical cultural resources matters.

Under **CUL-4** for each project, the project owners will provide to the DTCCL PI-Historian and Historical Archaeologist copies of the AFC, data responses, confidential cultural resources documents, and the Revised Staff Assessment (RSA) and RSA Errata for the project.

A. Historical Study:

The DTCCL PI-Historian will:

1. Develop an annotated bibliography, including oral history sources, to establish the context, themes, contributing resource types, material culture, period of significance, and boundaries for the DTCCL (contact staff for some local oral history sources;

2. Create a time line of DTC/C-AMA activities across the entire maneuver area, including Arizona;

3. Write the context, emphasizing material culture, and define the themes, contributor resource types, and period of significance;

4. Produce a general map of the historical DTC/C-AMA;

5. Compile a detailed map charting the maneuvers conducted on each of the three project sites (GSEP, Blythe Solar Power Plant, and Palen Solar Power Plant);

6. Compile a list of known DTCCL contributors, with a description and individual map plot of each, and a DTCCL map showing all contributors; and

7. Plot, describe, and justify the boundaries of the DTCCL from the historical perspective.

The DTCCL PI-Historian will provide the products of 2 through 6 to the three project CRSs.

The DTCCL PI-Historian will submit the draft DTCCL historical documentation to staff for review and approval and to the BLM Palm Springs Field Office archaeologist for review and comment.

B. Historical Archaeological Study

The DTCCL PI-Historian will obtain the services of a historical archaeologist to serve as DTCCL Historical Archaeologist. The DTCCL Historical Archaeologist's training and background must meet the U.S. Secretary of Interior's Professional Qualifications Standards for Historical Archaeology, as published in Title 36, Code of Federal Regulations, part 61. The resume of the DTCCL historical archaeologist must demonstrate familiarity with the artifacts, environmental modifications (deliberate and incidental, including tank tracks), and trash disposal patterns associated with World War II land-based army activities, and knowledge of the full range of late nineteenth and early-to-mid-twentieth-century domestic can, bottle, and ceramic diagnostic traits. The resume of the proposed DTCCL Historical Archaeologist will be submitted to staff for review and approval.

The DTCCL PI-Historian will direct the DTCCL Historical Archaeologist to:

1. Synthesize the present state of knowledge of DTCCL historical archaeology in the Chuckwalla Valley and Palo Verde Mesa and identify significant gaps in this knowledge, based on all pertinent literature, including published monographs and papers, unpublished reports in the files of the CHRIS and the BLM's Palm Springs Field Office, and on consultation with archaeologists actively conducting research in this region, particularly those based in academia;

2. Develop a comprehensive historic-period archaeological context for the DTCCL;

3. Have low-altitude aerial photography of the Chuckwalla Valley and Palo Verde Mesa flown, and analyze the results for evidence of larger-scale DTCCL (or other historic-period) activities and any unrecognized site types; if any such isites are identified within the project areas of the GSEP, Blythe Solar Power Project, or Palen Solar Power Project, notify the appropriate CRS(s) and have these resources recorded and added to the project's cultural resources inventory;

4. From the historical archaeological context, the literature synthesis, and the aerial photography, identify and describe the full range of archaeological resources known for the DTCCL and posit any additional resources that, while not known, are strongly suggested by the context and synthesis;

5. From the historical archaeological context and the literature synthesis, formulate specific research questions:

   a. To fill significant gaps in our knowledge of the DTCCL history of this area

b. Answerable with data from known archaeological resources
    i. Specify what kinds of resources have the relevant data
c. To determine the presence or absence of additional archaeological resources not presently known but likely
    i. Specify the methods for making this determination
d. To definitively distinguish Desert Strike sites from DTC/C-AMA sites
    i. Army records for locations of Desert Strike activities may facilitate eliminating some ambiguous sites not in those locations as Desert Strike sites;

6. Develop criteria for definitively attributing archaeological sites to the DTCCL based on archaeological traits;

7. Compile location data on known DTCCL archaeological elements, draft detailed GIS-based maps of the various site types and their spatial distributions, and draw on a map a provisional boundary for the DTCCL from the archaeological perspective, with a written justification for the boundary;

8. Train the Project Historical Archaeologists for the GSEP, Blythe Solar Power Plant Project. and Palen Solar Power Plant Project to correctly and consistently identify and record the historic-period military and domestic artifacts likely to be encountered on the these project sites and assist them in the development of field recording forms for these artifacts and sites; and

9. Assist the Project Historical Archaeologists for the GSEP, Blythe Solar Power Plant Project. and Palen Solar Power Plant Project to train their field crews to correctly and consistently identify and record the historic-period military and domestic artifacts likely to be encountered on the these project sites and to correctly and completely fill out the field forms developed for historic-period sites.

The DTCCL PI-Historian will provide the products of 1–8 to the three project CRSs.

The DTCCL PI-Historian will submit the draft DTCCL historic-period archaeological documentation to staff for review and approval and to the BLM Palm Springs Field Office archaeologist for review and comment.

C. Possible NRHP nomination of the DTCCL:

After all data recovery for the three projects is completed and reported, the DTCCL PI-Historian will confer with the DTCCL Historical Archaeologist to decide if the DTCCL is probably eligible for the NRHP, and, if so, the two will collaborate on a NRHP nomination for the DTCCL under Criterion D. If the DTCCL PI-Historian and the DTCCL Historical Archaeologist agree that a DTCCL nomination is appropriate, the DTCCL nomination will include:

1. Definition of the resource;

2. DTCCL probable contributing resource types, known and as-yet-unknown:
    a. tank tracks
    b. refuse (primarily food can) scatter
    c. refuse (other activities, e.g., auto-related; ± food) scatter
    d. multiple-episode refuse dump
    e. foxhole/temporary defensive position
    f. temporary camp-related (cleared areas for tents)
    g. semi-permanent camp-related (paths, activity areas, varied shelter sizes and shapes)
    h. features (hearths, other)
    i. other;

3. Historical background and context;

4. Justification of eligibility;

5. Period of significance and justification for POS;

6. Identification of contributors, map of archaeologically confirmed sites, and site descriptions of all;

7. Definition of boundaries, as identified through historical and archaeological research; and

8. Provision for adding additional contributing resources to the district as further survey is done.

The DTCCL PI-Historian will submit the draft nomination to staff for review and approval and to the BLM Palm Springs Field Office archaeologist for review and comment.

The DTCCL PI-Historian will submit the staff-approved DTCCL NRHP nomination to the State Historical Resources Commission, to initiate the process of formal consideration by the Keeper of the National Register, and track and facilitate the review of the nomination to acceptance, including required revisions and additions, or final rejection.

If the DTCCL PI-Historian and the DTCCL Historical Archaeologist agree that a DTCCL nomination is not appropriate, the DTCCL PI-Historian will write and submit to staff a summary of the evidence justifying that conclusion.

D. Management Plan and Information Dissemination:

The DTCCL PI-Historian will set up some kind of BLM management status for the DTCCL (hopefully NRHP eligibility, but some other protective status may be necessary):

1. For managing known, unimpacted resources

2. For adding further contributing resources to the district as further survey is done

The DTCCL PI-Historian will collaborate with the DTCCL Historical Archaeologist to prepare a research paper, interpreting the implications of the DTCCL data for our understanding of WWII combat training history, and submit it to a peer-reviewed journal.

The DTCCL PI-Historian will create or direct the creation of an provide an instruction module for use in local school districts, based on the data compiled by the DTCCL PI-Historian and the DTCCL Historical Archaeologist. The PI-Historian will also obtain the services of an exhibit preparer and direct the preparer to craft materials and/or a display for existing public interpretation venues at local museums (such as the nearby George S. Patton Memorial Museum or Wiley's Well rest area), that interpret the DTCCL for the public, based on the data compiled by the DTCCL PI-Historian and the DTCCL Historical Archaeologist. The DTCCL PI-Historian will arrange for the materials to be used and displayed.

The DTCCL PI-Historian will also explore other modes of public dissemination of DTCCL data and propose these, with budgets, to staff. Some possibilities are noted here, but the PI-Historian's proposals should not be limited to these.

A DTCCL website and chatroom for WWII veterans and history buffs to acquire and exchange information.

A hiking or off-road-vehicle trail connecting DTCCL archaeological remains of particular interest (and where artifacts of archaeological interest are no longer present), such as the more permanent camps and air bases. This trail and a map of it providing GPS coordinates, descriptions, historical information, and historic-period photographs could be developed with BLM and made available to visitors. A model for such a trail is the California Backcountry Discovery Trails system.

An over-flight video, with a narration identifying and providing the history of the DTCCL contributors that are better observed from the air, such as the airbases, interspersed with historic-period film footage of related DTCCL activities.

Prehistoric Trails Network Cultural Landscape, Project-Specific Mitigation for GSEP Impacts to Contributors

The PTNCL and its potential contributors are both archaeological and ethnographic resources. As such, the impacts to these resources must be evaluated by different kinds of specialists. The specialists will have individual and shared responsibilities, which are detailed above.

This process will begin with the PTNCL PI-Prehistoric Archaeologist writing an overarching prehistoric context for the Chuckwalla Valley and Palo Verde Mesa region, with specific emphasis on the PTNCL. This context will formally define the landscape boundaries, thematic associations, property types, and significance period by building up on the preliminary definitions provided by staff above. This context will include a synthesis of previous research in the area and, among other things, result in detailed GIS-based maps of trails and the various site types and their spatial distributions. In addition, the specialist will arrange and synthesize the results of a regional paleo-environmental reconstruction including lake fluctuations covering the last 14,000 years.

This specialist will also refine the research questions that will be addressed, the specific data sets needed to answer these questions, mitigation measures for the relevant site types, and the analytical standards that will be met. Until these refinements take place, research and mitigation will be modeled on McCarthy's (1993) report, under the guidance of BLM and Energy Commission archaeologists. This specialist will ensure that the work on prehistoric sites at all three solar project sites is consistent, and of high quality. They will also facilitate data sharing between different projects, project owners, and companies, if necessary.

The PTNCL Ethnographer will be in charge of identifying impacts to PTNCL ethnographic resources, through research and consultation with Native Americans, and for planning mitigation for these impacts. This specialist will have demonstrated experience as an ethnographer and have already established long-term relationships with Native American groups whose traditional territories are near to the project areas. This individual will develop a historic and ethnographic context for the PTNCL from historical, ethnohistoric, and ethnographic records and sources, including interviews with local Native American community members. The PTNCL Ethnographer will also organize site visits by interested individuals to important PTNCL locations such as springs, petroglyph sites, geoglyphs, and major trail segments (as described in **CUL-16**). It is hoped that these visits and the resulting conversations will determine if the three projects would have any significant impacts on the PTNCL ethnographic resources, from the perspective of the Native Americans, and what options for mitigation the Native Americans consider available. The Native American groups to be consulted by the PTNCL Ethnographer should include at a minimum representatives from the Quechan Tribe, the Chemehuevi Reservation, the Cabazon Band of Mission Indians, the Aqua Caliente Band of Mission Indians, the San Mañuel Band of Mission Indians, the Twentynine Palms Band of Mission Indians, La Cuna de Aztlan Sacred Sites Protection Circle, the Fort Mojave Indian Tribe, and the Colorado River Indian Tribes. The PTNCL Ethnographer will be in charge of coordinating with the BLM during their Section 106 process consultation with Native Americans to facilitate Energy Commission and BLM coordination.

The PTNCL Historian/Ethnohistorian will develop an annotated bibliography to establish the context, themes, contributing resource types, period of significance, and boundaries for the PTNCL from historical records and non-ethnographic accounts of Native Americans in the Chuckwalla Valley from the time of Spanish exploration to the present. Using data from the most pertinent sources, this specialist will write a historic context and define the themes, contributor resource types, and period of significance for the possible NRHP nomination of the PTNCL. The specialist will also compile a list of known PTCCL contributors, with a description and individual map plot of each, and a PTNCL map showing all contributors and plot, describe, and justify the boundaries of the PTNCL from the ethnohistorical perspective.

The PTNCL PI-Prehistoric Archaeologist, PTNCL Historian/Ethnohistorian, and PTNCL Ethnographer will communicate frequently and share information as they write their contexts. The final documents will share concepts and terminology. If all specialists agree that the PTNCL is probably eligible for listing on the NRHP, they will jointly write a nomination form under Criteria A and D and list the resources that they have identified from all three projects as contributors. Resources will be identified as contributors or

non-contributors on the basis of the contexts developed by the specialists and on the basis of the data recovered from each potential contributor during the evaluation and data recovery activities that staff has recommended for each known resource that would be impacted by the GSEP and the other two projects. The evaluation of each resource as a potential PTNCL contributor would suffice as well to evaluate it as an individual resource if the PTNCL specialists should agree that the PTNCL is not eligible for listing on the NRHP.

The PTNCL documentation and possible NRHP nomination program includes two additional mitigation measures for GSEP's contribution to the significant cumulative impact staff identified. First, the PTNCL fund would contribute money for the BLM Palm Springs Field Office to hire a GIS Technician to digitize and input data into their existing GIS database from DPR 523 forms for 2,500 archaeological sites of BLM's choice. This would ameliorate the current situation, in which the majority of the previously identified cultural resources managed by the BLM's Palm Springs Field Office have not been entered into their existing GIS database. The lack of an up-to-date digital database for the cultural resources of the region hampers planning efforts for local, state, and federal agencies and makes it difficult for them to meet their obligations under NEPA, CEQA, and Section 106 of the NHPA. Updating this database is central to BLM managing known PTNCL contributors that are not subject to project impacts at this time and additional contributors to the PTNCL as they are identified in subsequent surveys.

Second, the PTNCL fund would make a donation of $20,000 to the Cultural Conservancy in support of the Salt Song Trail Project. The Cultural Conservancy is a Native American nonprofit organization dedicated to the preservation and revitalization of indigenous cultures and their ancestral lands. The Salt Song Trail project is an oral history and education project recording Colorado River Native American origin and migration stories centered on ancient trail systems, of which the PTNCL is a part.

DTC/C-AMA Cultural Landscape, Project-Specific Mitigation for GSEP Impacts to Contributors

The DTCCL and its potential contributors will be defined and impacts to these resources will be evaluated by two specialists: a DTCCL PI and Historian and a DTCCL Historical Archaeologist. The responsibilities of each specialist are outlined below.

The DTCCL PI-Historian will be a specialist in World War military history who will write a context for the DTCCL expanding upon but not duplicating the efforts of Bischoff (2000 and 2009). The context will emphasize material culture, create a timeline of activities across the entire maneuver area and result in detailed maps that focus on the three project areas and the maneuvers that took place in each. This specialist will also conduct oral history interview with veterans and synthesize previously recorded interviews.

The DTCCL Historical Archaeologist will be a specialist in the identification, analysis and interpretation of the artifacts, environmental modifications (e.g. tank tracks), and trash disposal patterns associated with the early phases of WWII land-based army activities. In addition, the specialist will be knowledgeable of the full range of late nineteenth and early-to-mid-twentieth-century can, bottle, and ceramic diagnostic traits.

As some of these skills are rare, the DTCCL Historical Archaeologist will be responsible for training the field crews with the above skills so they can accurately complete in-field artifact analyses. The specialist will also be responsible for accurately and consistently determining if each GSEP site is associated with the DTCCL, or some other historic time period such as pre-1940s mining and ranching. This specialist will also ensure that the field work on the historic-period archaeological sites at all three solar project sites is consistent, and of high quality. This person will also facilitate data sharing between different projects, project owners, and companies, if necessary.

Together, the DTCCL PI-Historian and the DTCCL Historical Archaeologist will write a context that: refines the research questions that will be addressed, identifies the specific data sets needed to answer these questions, develops mitigation measures for the relevant site types, and establishes the analytical standards that will be met. Until these refinements take place, research and mitigation will be modeled on Bischoff's (2000 and 2009) context, under the guidance of BLM and Energy Commission archaeologists.

Finally, if both DTCCL specialists agree that the DTCCL is probably eligible for listing on the NRHP, they will jointly write a nomination form under Criterion D and any other Criterion they think is appropriate. The nomination will list the resources that they have identified from all three projects as contributors and non-contributors on the basis of the contexts developed by the specialists and on the basis of the data recovered from each potential contributor during the evaluation and data recovery activities that staff has recommended for each known resource that would be impacted by the GSEP and the other two projects. The evaluation of each resource as a potential DTCCL contributor would suffice as well to evaluate it as an individual resource if the DTCCL specialists should agree that the DTCCL is not eligible for listing on the NRHP.

Mitigation for GSEP Impacts to Individual Cultural Resources

Construction-related activities associated with the GSEP project have the potential to cause significant direct impacts to 27 individual cultural resources. These direct impacts are expected to involve the destruction of the portions of each site within the GSEP facility footprint or linear corridor. Twelve prehistoric resources will be subject to direct impacts. Six of these resources are potential contributing elements to the PTNCL. Fourteen historic-period archaeological sites and 1 multi-component site are potential contributing elements to the DTCCL. Two hundred and fifty-four additional prehistoric sites are present within the GSEP ethnographic PAA and are potentially subject to significant indirect impacts.

The following discussion of the resolution of significant impacts is organized by time period and association with one of the two cultural landscapes. Within each of the two landscapes, sites are further grouped by the kind of mitigation required by the amount of information we have about each site and its location within the GSEP site facility footprint and linear corridor.

Mitigation for GSEP Impacts to Prehistoric Sites

Staff's mitigation measures for 12 GSEP prehistoric sites have been divided into two parts: a discussion of mitigation measures for assumed-eligible prehistoric sites that do not appear to be part of the PTNCL, and a discussion of mitigation measures for those

sites that do appear to be part of the landscape and are therefore eligible as contributors to an assumed-eligible landscape. The mitigation for potential contributors to the PTNCL is further divided into mitigation for direct impacts and mitigation for indirect impacts.

Mitigating Impacts to Assumed-Eligible Prehistoric Sites Not Associated with a Cultural Landscape

Construction activity on the main GSEP plant site and the proposed linear alignments may cause the destruction of six prehistoric to historic-period Native American archaeological sites that are not associated with the PTNCL (**Cultural Resources Table 15**). The destruction of these sites through the construction of the proposed project would cause a substantial adverse change in the significance of these historical resources, and would, therefore, have a significant effect on the environment. Staff here recommends a program to reduce the significance of the loss of the resources, prior to the onset of any ground disturbance by the project owner within 30 m of the resource boundary. The loss of the resource represents a loss of information that it is in the public interest to preserve. The recommended program attempts to compensate the public for the loss of a unique body of information on the prehistory and early history of Native American life in the Chuckwalla Valley through the partial recovery and dissemination of that information.

CULTURAL RESOURCES Table 15
Prehistoric Sites for Which Mitigation of Project Impacts is Required

Resource	Resource Description	CRHR Eligibility
CA-Riv-9084	Artifact Scatter: 17 acres, artifacts (n=96), lithics, ground stone, 1 marine shell, and 1 Olivella shell bead (1100 cal AD to Contact).	Assumed Eligible
CA-Riv-9209	Artifact Scatter: 2 acres, artifacts (n=24), 7 debitage, 4 ground stone fragments, 1 core.	Assumed Eligible
CA-Riv-9215	Artifact Scatter: 3.6 acres, artifacts (n=25), 10 debitage, 1 projectile point (no ID).	Assumed Eligible
CA-Riv-9216	Artifact Scatter: 4 acres, near lake shore, 2 concentrations, artifacts (n=45), lithics, groundstone.	Assumed Eligible
CA-Riv-9220	Artifact Scatter: 9.4 acres, artifacts (n=94), lithics, 1 projectile point tip, 1 Cottonwood leaf-shaped projectile point, 1 metate fragment.	Assumed Eligible
CA-Riv-9223	Lithic Scatter: 1 acre, debitage (n=20).	Assumed Eligible

Staff recommends implementation of a phased data recovery program at each of these sites that would partially mitigate their destruction by GSEP construction. The phases of mitigation that staff recommends would serve to recover information regarding the age and function of each of these sites. This will be accomplished through the development of a more complete inventory of the features and artifacts present.

The first phase of the mitigation program would be to determine if buried deposits are present at each site, as described in staff's recommended **CUL-10**. This process will

begin by augmenting the original site map to create a Trimble GPS map showing details of the nearby natural features such as seasonal drainages, the site boundaries, the location of each individual artifact, and the boundaries around any artifact concentrations. All artifacts will be collected after their location has been mapped, and returned to the laboratory for further analysis. The specific landform for each site and its relationship to specific ancient lakeshores of Ford Dry Lake will also be identified. If lakeshores are within 100 m of one of these sites they will be included in the new site map. At each site the archaeologists for the project owner will excavate a 1m by 1m unit reaching to the upper boundary of the Qoaf alluvium in the locations of highest artifact density. If multiple artifact concentrations have been identified, one excavation unit will be placed in the center of each concentration. The horizontal limits of the site will be further explored by excavating test units down to the upper boundary of the Qoaf alluvium with a hand auger at four spots equally spread around the exterior edge of each site. If no buried deposits or additional features are identified during the excavations described above, then the data potential of these sites will be considered exhausted thereby reducing the loss of these resources to less-than-significant levels.

However, if buried deposits or additional features are identified at any of these six sites, then the second phase of the mitigation program will begin. This kind of mitigation is described in detail in staff's recommended **CUL-11** and below.

Buried deposits would require further excavation to define the horizontal and vertical limits of the site. In particular, it would determine what archaeological features are present, including their numbers, location, and layout. Staff recommends that any data recovery involving mechanical subsurface sampling be supervised by a project director with demonstrated experience supervising large excavation projects where mechanical excavation was an essential part of the project (as described in **CUL-3)**. As prehistoric structures, pits, and water features (i.e. wells, reservoirs, and canals) are often subtle and difficult to identify in backhoe trench walls, this project director should also have demonstrated experience with Sonoran Desert archaeology in depositional contexts. Staff further recommends that this subsurface sampling be conducted mechanically by an experienced archaeologist/backhoe operator team (as described in **CUL-3**).

Staff recommends a mitigation program what would partially mitigate the destruction of buried archaeological deposits in this Sonoran Desert lakeside context (**CUL-11**). A series of backhoe trenches placed at systematic intervals across each site with lengths that will allow a sampling percentage of 10 percent of the portion of the site expected to be destroyed. A trenching plan will be developed by the project owner in consultation with the Energy Commission's Compliance Project Manager (CPM). Staff recommends 10-m-to-50-m spaced trenches oriented north-south as an initial step, unless site specific conditions suggest better results using a different arrangement. Backhoe trenches will be 2 feet wide and generally dug to depths no greater than 5 feet to conform to OSHA standards. If a depth greater than 5 feet is required to investigate archaeological features, said trenches will either be stepped or hydraulic shoring will be utilized to comply with OSHA regulations. Trench walls will be scraped with hand tools to provide a clear exposure of subsurface cultural remains. Archaeological features identified in trench walls will be marked and assigned a number. A trench record form will be completed for each trench that includes its essential characteristics: (trench number, length, width, and depth), the locations and types of archaeological features,

the stratigraphy and characteristics of exposed sediments, and locations of disturbances such as tree roots or animal burrows.

Features located during trenching will be documented through standardized forms, scaled profile drawings, plan view maps, and photographs. Between 50 and 100 percent of the features identified in the trenches will be fully or partially excavated depending on their state of preservation and presence or absence chronological materials. These proportions will be negotiated between the project owner and CPM on a site-by-site basis depending on the nature of the features identified, their rarity, and their information potential. Buried features will be excavated by hand or mechanically "stripped" with a backhoe bucket by removing sterile overburden until 20 cm above the limits of the feature as identified in the trench. The remainder of the feature will be excavated by hand using the standard archaeological methods as outlined by the California SHPO.

Samples such as flotation, pollen, and charcoal would be collected from appropriate contexts. Artifacts such as lithics, ceramics, groundstone, and shell will be subject to the professionally appropriate laboratory analyses and curation. The age and function of each site will be determined if possible.

All information collected during this excavation program will be analyzed and included in the overall synthetic report written by the project owner regarding the data recovery phases of the archaeological work for GSEP **(CUL-6)**.

Finally, if buried deposits are present, staff recommends two additional mitigation measures in order to offset the loss of information that the above field investigations alone cannot mitigate. One measure is the preparation and publication of a peer-reviewed journal article to inform the professional archaeological community of these prehistoric Native American sites and to interpret their role in the prehistory of the Mojave Desert. A second measure is the preparation and presentation of materials that interpret these sites so that the public derives a direct and relatively immediate benefit from the degradation of their environment. Potential public interpretation efforts may include the preparation of an instruction module for use in local school districts, or the preparation of a display for existing public interpretation venues such as Wiley's Well Road Rest Area.

Upon the completion of the data recovery, analyses, report writing, and dissemination of information to the public and interested professionals, a statistically valid sample of the unique information contained within these buried archaeological resources will have been recovered, thereby reducing the loss of these resources to less-than-significant levels.

Mitigating Impacts to Assumed-Eligible Prehistoric Sites Identified as PTNCL Contributors

Construction activity on the main GSEP plant site and the proposed linear alignments may cause the destruction of six prehistoric to historic-period Native American archaeological sites that are associated with the PTNCL (**Cultural Resources Table 16**). Three of these sites are small pot drops and three are large temporary camps.

CULTURAL RESOURCES Table 16
Potential Contributors to the Prehistoric Trails Network Cultural Landscape for Which Mitigation of Direct Project Impacts is Required

Resource	Resource Description	CRHR Eligibility
Cultural Landscapes		
Prehistoric Trails Network Cultural Landscape	Prehistoric Trails and associated sites: Includes 248 sites in the GSEP ethnographic PAA including McCoy Spring National Register District (CA-Riv-0132), and 6 sites listed below. Other contributors outside of GSEP PAAs .	Assumed Eligible
Prehistoric Archaeological Resources		
CA-Riv-0260	Temporary Camp: 62 acres, artifacts (n=1000+), features. PTNCL contributor.	Eligible
CA-Riv-0663	Temporary Camp: 186 acres, artifacts (n=1000+), features. PTNCL contributor.	Eligible
CA-Riv-9072	Temporary Camp: 350 acres, artifacts (n=1000+), features. Rose Spring projectile point (AD 200 to 1100). PTNCL contributor.	Eligible
CA-Riv-9227	Artifact Scatter: 3 acres, artifacts (n=18), pot drop brownware sherds (n=14), 1 marine shell fragment. Possible PTNCL contributor.	Assumed Eligible
CA-Riv-9249	Ceramic Scatter: 1 acre, brownware sherds (n=21), pot drop. Possible PTNCL contributor.	Assumed Eligible
CA-Riv-9255	Artifact Scatter: 1.7 acres, artifacts (n=40), 1 concentration, brownware pot drop (n=10), FAR, groundstone. Possible PTNCL contributor.	Assumed Eligible

PTNCL Pot Drops

Sites CA-Riv-9227, CA-Riv-9249, and CA-RIV-9255 are small prehistoric pot drops associated with the PTNCL which are expected to be destroyed by the proposed GSEP construction. These sites are both archaeological and ethnographic resources. Archaeologically, these sites are important in that they may indicate the presence of a prehistoric trail that has since been destroyed or obscured by drifting sand. The type of ceramics found at each site may reveal when this prehistoric offering was made, while the materials of each pot may indicate the location where the pot was made. When considered alone, the information available from a pot drop site is not particularly valuable, but, these sites are an important part of the larger PTNCL. As such, each of these sites are considered by staff to be eligible for inclusion in the NRHP and the CRHR.

The potential destruction of these three sites as a result of the construction of the proposed project would cause a substantial adverse change in the significance of a historical resource, and would therefore have a significant effect on the environment. Staff here recommends a program to reduce the significance of the loss of these sites, prior to the onset of any ground disturbance by the applicant within 30 m of the boundary of each site boundary. The loss of these resources represents a loss of information that it is in the public interest to preserve. The recommended program,

attempts to compensate the public for the loss of a unique body of information on the prehistory and early history of Native American life in the Chuckwalla Valley through the partial recovery and dissemination of that information.

Staff recommends that the applicant conduct a mitigation program utilizing the first part of **CUL-10**, so that the pot drop site is mapped in detail, if necessary, and surface artifacts are collected after their locations are noted. The location of the pot drop site would then be added to the overall PTNCL map described in the PTNCL documentation and possible NRHP nomination program to determine if these pot drops indicate the presence of a new or already identified trail or destination. Finally, the ceramics collected would be identified to the most specific level possible for ware, type, and temper categories with tempers sourced using petrography where appropriate. The results would be compared to the results of other ceramic analyses from PTNCL and other regional sites. The results and interpretations of the analyses of these three sites would be included both in the appropriate GSEP archaeological data recovery report and in any synthetic reports or publications written by the PTNCL Prehistoric Archaeologist and/or PTNCL Ethnographer. Upon the completion of these analyses and reports the data potential of these sites will be considered exhausted, thereby reducing the loss of the archaeological information contained by these resources to less-than-significant levels.

All information collected during this excavation program will be analyzed and included in the overall synthetic report written by the project owner regarding the data recovery phases of the archaeological work for GSEP **(CUL-6)**.

It is uncertain if any mitigation for the ethnographic aspects of these resources is appropriate. Staff hopes that BLM consultation with Native American groups during the Section 106 process, formalized in the PA, will provide some guidance.

PTNCL Temporary Camps

Sites CA-Riv-0260, CA-Riv-0663, and CA-RIV-9072 are large prehistoric temporary camps expected to be partially destroyed by the proposed GSEP construction. These sites appear to be multi-component, short-term residential areas occupied intermittently for thousands of years. Features such as the remains of residential structures, hearths, and wells may be present at these sites. Several prehistoric trails recorded by McCarthy (1993) appear to lead in the direction of these sites. As discussed above, each of these sites are considered by staff to be eligible for inclusion in the NRHP and the CRHR, both as individual sites and as potential contributors to the PTNCL as “destinations.”

The potential destruction of these sites as a result of the construction of the proposed project would cause a substantial adverse change in the significance of a historical resource, and would therefore have a significant effect on the environment. Staff here recommends a program to reduce the significance of the loss of these sites, prior to the onset of any ground disturbance by the applicant within 30 m of the boundary of each site boundary. The loss of these resources represents a loss of information that it is in the public interest to preserve. The recommended program attempts to compensate the public for the loss of a unique body of information on the prehistory and early history of Native American life in the Chuckwalla Valley through the partial recovery and dissemination of that information.

Staff recommends a program of mitigation to reduce the expected impacts listed above. Full data recovery (**CUL-10** and **CUL-11**) is recommended for those parts of each site within the site footprint or linear corridor that are expected to be destroyed. For the remainder of each site, staff recommends limited surface collection (**CUL-12**) and avoidance measures (**CUL-13**) to ensure that there would be no physical damage to the site as a result of construction, operation, or maintenance of the project.

Staff's avoidance measures are incorporated in staff's recommended **CUL-13**. Prior to the onset of ground-disturbing activities within 30 m of a site, the applicant would re-establish the boundary of each site, add a 10-m-wide buffer around the periphery of each boundary, and flag the resulting space in a conspicuous manner. The applicant would then ensure that a cultural resource monitor (CRM) would enforce avoidance of the flagged areas during GSEP construction. A further provision would be made to permanently mark the boundary around the site and the buffer and then set the bounded area aside as an environmentally sensitive area that would not be subject to disturbance during the life of the project.

Staff's surface collection mitigation measures are incorporated in staff's recommended **CUL-12**. All three sites contain artifacts that are of interest to the general public, which places them in danger of removal, particularly during construction activities but also during operation. In the case of these three sites, staff recommends that the best way to prevent vandalism is through surface collection. Prior to ground-disturbing activities, all diagnostic artifacts (including pot drops) will be mapped and collected. Further, additional surface collection transects, representing 10 percent of the portion of each site that is outside of the plant site boundary, and flagged for avoidance, will be judgmentally placed in areas of highest artifact density. All artifacts collected will be mapped and analyzed. This analysis will be incorporated into the data recovery report for each appropriate site.

Staff recommends data recovery for those portions of each site that will be destroyed as the result of GSEP construction during site grading, grubbing, and top-soil removal. The linear corridor alignment will pass close by the east and north sides of CA-Riv-0260. If this site can be avoided, then mitigation measures **CUL-12**, **CUL-13**, and **CUL-8** will be sufficient. However, the newly proposed secondary access road may bisect the site from north to south, destroying the part of the site within the road corridor. Data recovery would be required in this case. Similarly, the GSEP linear corridor passes close by the east and north edge of site CA-Riv-0663. Ultimately the corridor is expected to destroy the northern edge of the site. In addition, the secondary road may avoid site CA-Riv-0260 and bisect CA-Riv-0663 instead. Finally, the GSEP site footprint is expected to completely destroy the northeastern corner CA-Riv-9072. In addition, the preliminary design of the storm drainage system has an outlet near or within the CA-Riv-9072 that may result in impacts from erosion.

In each case, staff recommends that the project owner clearly mark the portion of each site that will be subject to ground disturbance. Staff here recommends that the project owner implement mapping and collection of all artifacts visible on the surface of the portion of the site that will be destroyed, as stipulated in **CUL-10**. Next staff recommends that mechanical subsurface sampling be conducted at sites CA-Riv-0260, CA-Riv-0663, and CA-Riv-9072, as described in staff's recommended **CUL-11**,

performed by a cultural resources monitor and a backhoe operator, with qualifications described in **CUL-3**, and supervised by the project prehistoric archaeologist, with qualifications described in **CUL-3**. Additionally, in **CUL-11**, staff recommends that the results of the data recovery at CA-Riv-0260, CA-Riv-0663, and CA-Riv-9072 be prepared in a paper and submitted for publication in a peer-reviewed professional archaeological journal. This paper should place these sites in the larger context of the region, particularly discussing their role in the PTNCL. The PTNCL Prehistoric Archaeologist and PTNCL Ethnographer will review and evaluate the paper prior to its submission for publication, ensuring its consistency with other products resulting from the PTNCL research program.

Upon the completion of the data recovery, analyses, report writing **(CUL-6)**, and dissemination of information to the public and interested professionals, a statistically valid sample of the unique information contained within these archaeological resources will have been recovered, thereby reducing the partial loss of these resources to less-than-significant levels.

It is uncertain if any mitigation for the ethnographic aspects of these resources is appropriate. Staff hopes that BLM consultation with Native American groups during the Section 106 process and formalized in the PA, will provide some guidance.

Mitigation for GSEP Indirect Impacts to PTNCL Contributors

Construction-related activities associated with the GSEP project have the potential to cause significant indirect impacts to the 248 potential contributors to the PTNCL that have been identified outside the GSEP site footprint and linear corridor, but within the ethnographic PAA. As discussed above, each of these sites are considered by staff to be eligible for inclusion in the NRHP and the CRHR as potential contributors to the PTNCL. All of these sites are both archaeological and ethnographic resources. As such, two distinct kinds of impacts and related mitigation are required. For archaeological resources the potential impacts are related to the loss of information. For ethnographic resources potential impacts are related to spiritual and religious issues. Ethnographic impacts and the severity of those impacts can only be identified by an expert in the behavior, beliefs, and knowledge germane to understanding the landscape's cultural significance. Only members of the community who value the resource culturally and/or spiritually, in this case Native Americans, can determine impacts and suggest possible mitigation. The indirect impacts to the PTNCL as a result of the construction of the proposed project would cause a substantial adverse change in the significance of a historical resource and would therefore have a significant effect on the environment. Staff here recommends a program to reduce these impacts.

The primary source of indirect impacts to potential contributors to the PTNCL is vandalism as a result of increased access. These contributors are present across much of the western flank of the McCoy Mountains, at varying distances from the GSEP site footprint and linear corridor. However, the easiest road access leading towards the McCoy Mountains is directly accessible from the planned GSEP staging area at Wiley's Well Road Rest Area. The proposed project would involve an average of 650 employees for 37 months (GSEP 2009a, p. 3-26). Traffic and off-road exploration of the areas surrounding the project site would undoubtedly increase. Improved accessibility

often results in vandalism, resulting in the partial loss of information that it is in the public interest to preserve.

Staff recommends three mitigation measures to address the issue of potential vandalism to PTNCL contributors. First, staff recommends, as described in **CUL-14**, the project owner build a standard BLM barbed-wire fence along the southern boundary of the Palen-McCoy Wilderness between the eastern edge of the GSEP site footprint to the McCoy Mountains where the wilderness boundary turns north. Gates will be built in several locations at the discretion of the BLM. This fence will serve to prevent vehicle access to the Palen-McCoy Wilderness, which at present is unimpeded.

Second, as described in **CUL-15**, staff recommends that the project owner build protective fences around geoglyphs CA-Riv-0661 and CA-Riv-0662. Geoglyphs are well known, but extremely rare sacred features for the Native American groups in the region. They are currently located along the Blythe-Eagle Mountain Transmission Line corridor, which includes a two-track road where local visitors could have already disturbed these features with their vehicles. This area is on BLM-managed land, but south of the Palen-McCoy Wilderness boundary. These fences should meet BLM standards and be modeled after the existing fences around the Blythe Intaligos.

Third, staff recommends the project owner develop an active monitoring program for the PTNCL, as described in **CUL-16**. The PTNCL Prehistoric Archaeologist and PTNCL Ethnographer should be involved in the design of this monitoring program. At a minimum, the monitor would be a qualified cultural resources monitor under **CUL-3**. However, if requested by local Native American groups, the monitoring team would also include a Native American representative. Monitoring efforts would focus on areas along the Halchidhoma Trail (CA-Riv-0053T), with a particular emphasis on petroglyph sites such as McCoy Springs National Register District. Monitoring in the Palen-McCoy Wilderness would take place on horseback, while monitoring outside of the wilderness area could use motorized vehicles.

Prior to the beginning of construction, monitors will visit the main sites to perform an initial evaluation. Monitors will be provided with a Trimble GPS containing site locations, descriptions of the artifacts present at each site, and detailed photographs taken by McCarthy's team during the original recording of these resources. During the GSEP construction a qualified cultural resources monitor would visit the site and examine it thoroughly for new vandalism, using the records contained in the Trimble to track the amounts and locations of the damage. All new vandalism would be photographed and mapped by the monitor when it is discovered. During the first six months of construction, monitoring visits will take place once a month. This schedule will be modified in response to increasing amounts of vandalism, as outlined in the plan written by the PTNCL Prehistoric Archaeologist and PTNCL Ethnographer. If increasing amounts of vandalism warrant it, a data recovery phase, in the form of the surface collection and analysis of artifacts may be initiated at the discretion of the PTNCL specialists.

All information collected during this monitoring program will be analyzed and included in the overall synthetic report written by the project owner regarding the data recovery phases of the archaeological work for GSEP **(CUL-6)**. Further, if relevant, this information will be included in the possible formal nomination of the PTNCL to the

NRHP, which will be written by the PTNCL PI-Prehistoric Archaeologist, PTNCL Ethnographer, and PTCCL Ethnohistorian.

The collection of important information and the protection of significant archaeological and ethnographic resources will result in reducing the indirect impacts of the GSEP project on the PTNCL to less-than-significant levels.

Mitigation for GSEP Impacts to the DTC/C-AMA Cultural Landscape

The 15 historic-period archaeological sites within the GSEP project area that are potential contributors to the DTCCL (**Cultural Resources Table 17**) are expected to be completely destroyed by the proposed GSEP construction. As a result of data insufficiencies in the site forms of these 15 sites, staff is uncertain if these sites are associated with the DTCCL. Data insufficiencies included site form recording inconsistencies between recorders, seeming incongruities in the co-occurrence of certain can types, and the lack of discussion of possible military uses of some artifacts. As a result staff was concerned as to whether dateable can and bottle traits were correctly identified in the field. Misidentification could have resulted in sites that may date to the DTC/C-AMA era (1942-1944) being incorrectly interpreted as dating to the mid-twentieth century. Misidentification would also result in multi-component sites with some cans ostensibly dating to the mid-twentieth-century and some to the DTC/C-AMA era having incorrect artifact counts if all the cans actually date to the DTC/C-AMA era. These uncertainties could contribute to problems in correctly determining contributors to an assumed-eligible DTC/C-AMA cultural landscape in two ways. First, it could result in not considering sites that could be contributors. Second, it could result in incorrect counts of artifacts and the subsequent disqualification of contributing elements when the basis for determination of contributors is the number of artifacts representing the period of significance.

Given these concerns, staff assumed that all historic period sites were eligible for listing on both the NRHP and CRHR for the purposes of the present siting case. The potential destruction of these 15 sites as a result of the construction of the proposed project would cause a substantial adverse change in the significance of what here is assumed to be a historical resource and would therefore have a significant effect on the environment. As such, these impacts, if unavoidable, must be mitigated.

CULTURAL RESOURCES Table 17
Potential Contributors to DTC/C-AMA Cultural Landscape for which Mitigation of Project Impacts Would Be Required

Resource	Resource Description	CRHR Eligibility
Cultural Landscapes		
DTC/C-AMA Cultural Landscape	World War II-era Refuse Scatters and Features: includes 14 historic-period archaeological sites, 1 dual component site, and 1 unknown site listed below. Other contributors outside of GSEP PAAs.	Assumed Eligible
Historical Archaeological Resources		
P33-13598	Refuse Scatter: 0.04 acres, cans (n=8). Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9063H	Refuse Scatter: 1.22 acres, artifacts (n=15). Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9203H	Refuse Scatter: 5.2 acres, artifacts (n=84), food and beverage cans, can fragments, glass bottles, and plastic. Dual component? Post 1950? Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9204H	Refuse Scatter: 1 acre, cans and bottles (1932-1953). Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9211H	Refuse Scatter: 0.2 acres, cans and glass bottles, 1934 penny. Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9213H	Refuse Scatter: 2 acres, (n=60) cans. Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9214H	Refuse Scatter: 0.7 acres, (n=10) cans. Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9228H	Refuse Scatter: 0.06 acres, 10 cans, bottle base (1938-1951), bottle base (1916-1931), razor blade, glass fragments. Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9245H	Refuse Scatter: 3.3 acres, (n=14), cans, thermos, flare. Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9251H	Refuse Scatter: 0.2 acres, (n=9) cans, machine gun cartridges, pocket knife, bailing wire. Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9254H	Refuse Scatter: 0.6 acres, (n=21) cans. Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9258H	Refuse Scatter: 2.3 acres, (n=150+) cans, glass bottles, machine gun cartridges, 5 artifact concentrations. Possible contributor to DTCCL.	Assumed Eligible
CA-Riv-9259H	Feature: 0.3 acres, 2 stake alignments. Possible contributor to DTCCL.	Assumed Eligible
Dual Component Resources		
CA-Riv-9205H	Refuse Scatter/Lithic Scatter: 1 acre, Prehistoric (n=8) lithics and groundstone. Historic (n=100+) cans, glass (post 1945), auto parts (1930-1940). Possible contributor to DTCCL.	Assumed Eligible

Resource	Resource Description	CRHR Eligibility
Unknown		
CA-Riv-0259 (P33-00259) Or (P33-13656)	Features: 1 acre, Prehistoric rock rings or WWII-era foxholes with refuse scatter? 2004 visit suggests this site is a possible contributor to DTCCL.	Assumed Eligible

Staff here recommends a program based on recommendations by Bischoff (2000, p. 135) to reduce the significance of the loss of these historic resources. This program must be complete prior to the onset of ground disturbance by the project owner. The loss of these resources represents a loss of information that is in the public interest to preserve. The recommended program, the details of which may be found in **CUL-17**, attempts to compensate the public for the loss of a unique body of information about World War II American military training for through the partial recovery and dissemination of that information.

Following Bischoff (2000, p. 135) staff recommends that the project owner hire a DTCCL Historian and DTCCL Historical Archaeologist, as detailed in the DTCCL documentation and possible NRHP nomination program. As discussed previously, these two specialists would collaborate in writing a historical context expanding on Bischoff's work and formally nominate DTCCL for listing on the NRHP

For the 15 potential contributors to the DTCCL subject to direct impacts by GSEP, staff recommends that in coordination with the archaeologist for the project owner, the DTCCL Historical Archaeologist would assist with field work, complete an artifact analysis, and write a final report. This recommended program is described in detail in staff's recommended **CUL-17**. In preparation for field work the DTCCL Historical Archaeologist would train the crew in World War II military artifact identification techniques. If the DTCCL Historical Archaeologist is unable to participate in the field work personally, an experienced historical archaeologist who has been trained by the specialist would lead field work at each site.

The 15 sites would be revisited and an infield artifact analysis would be completed. At a minimum this analysis would include point proveniencing, photographing, measuring the dimensions of all artifacts present. Types of seams and closures for each bottle and can would also be noted. Unusual or unidentifiable artifacts would be collected and submitted to the DTCCL Historical Archaeologist for further analysis. All artifacts may be collected if the DTCCL Historical Archaeologist so requests it. Bischoff notes that the burial of trash was common at the DTC/C-AMA (2000, p.135). Each site would be examined with a metal detector to determine if any buried deposits are present. If buried deposits are located, they would be excavated by an experienced historical archaeologist.

After the completion of the field work, the DTCCL Historical Archaeologist would review the data collected in the field, do an analysis, and write a report **(CUL-6)**. The DTCCL Historical Archaeologist would determine if these sites are contributing elements the DTC/C-AMA. If so, the specialist would conduct historical research to identify which

specific maneuvers took place on the GSEP project area and as a result place the 15 archaeological sites into context with these historical events.

Finally, staff recommends that the results of the data recovery at these 15 historic WWII era sites be prepared in a paper and submitted for publication peer-reviewed professional archaeological journal as stipulated in **CUL-17**. This paper should place these sites in the larger context of the region, particularly discussing their role in the DTCCL. The DTCCL Historian and DTCCL Historical Archaeologist will review and evaluate the paper prior to it submission for publication, ensuring its consistency with other products related to the DTCCL.

Upon the completion of the data recovery, analyses, report writing and dissemination of information to the public and interested professionals, a statistically valid sample of the unique information contained within these archaeological resources will have been recovered, thereby reducing the loss of these resources to less-than-significant levels.

Mitigation for GSEP Impacts to Built-Environment Resources

Wiley's Well Road

No significant direct construction impacts to the eligible portions of Wiley's Well Road are presently confirmed. However, the GSEP linear facilities corridor has recently been redesigned. Possible project impacts to Wiley's Well Road need to be re-evaluated in the context of the new linear facilities corridor alignment. If the construction of the newly proposed GSEP linear facilities corridor would cause a substantial adverse change in the significance of Wiley's Well Road, then the severity of these impacts would need to be mitigated to less-than-significant levels.

Treatment of Discovery of Buried Archaeological Deposits

Construction at the GSEP main site footprint, along the linear corridors, or along the secondary access road alignment, may cause partial destruction of significant and unknown buried archaeological deposits. Staff here recommends a construction monitoring program that provides for different monitoring protocols depending on two main landform designations and the type of construction taking place. The primary basis for the protocols is the geoarchaeology study completed by the project owner (see "Geoarchaeology" subsection above).

Main Site Footprint

The majority of the proposed site footprint is covered in deposits of Holocene age. Staff considers these deposits to have a moderate-to-high potential to contain well-preserved, buried cultural materials. However, these materials would be expected within approximately 2 feet of the modern ground surface, in sediments stratigraphically above the Qoaf alluvium. The majority of the sediments that have the potential to contain cultural materials will be disturbed during the grading and grubbing of the site. Staff recommends that the project owner actively monitor ground disturbance during grading until the upper surface of the Qoaf alluvium is reached. This protocol is described in **CUL-8**. The Qoaf alluvium dates to the Pleistocene epoch, largely predating the commonly acknowledged presence of humans in North American. Staff believes that construction monitoring through or beneath this alluvium would be largely unproductive.

However, any buried archaeological deposits that are found during the course of ground disturbance would be subject to the protocol in **CUL-11**.

If the Qoaf alluvium is not reached during grading, as may happen at the southern edge of the GSEP site footprint, then the active cultural resources monitoring must continue in these areas only, until the sterile Qoaf alluvium is reached.

Linear Corridor and Secondary Access Road

The highest density of sites is expected in association with the Ford Dry Lake ancient lakeshore, reflecting human utilization of plant and animal resources flourishing near this desert water source. These sites are also expected to be the best preserved since the gentle slope would result in low-energy sheet wash, facilitating the burial of sites without a high degree of disturbance of anthropogenic materials. The GSEP linear access corridor and secondary access road are planned to pass by known sites that are eligible for the NRHP and CRHR (CA-Riv-0260 and CA-Riv-0663), and they will cut through primarily ancient lakeshore sediments likely to contain buried sites.

Staff recommends two kinds of monitoring during GSEP construction activities in these sensitive areas. First, during linear corridor and road grading, staff recommends active monitoring identical to that used for the main site footprint (**CUL-8**). During utility trenching, which is expected to reach a depth of 10 feet, staff recommends a monitoring protocol where the face of each trench is examined for features. As described in **CUL-3**, monitoring will be conducted by an archaeologist with demonstrated experience in identifying buried features in backhoe trench walls in Sonoran Desert depositional contexts. In addition, while the utility trench is open, the project owner will arrange for a geologist or geomorphologist to observe the exposed stratigraphy. This specialist will collect information and samples that will aid in the paleo-environmental reconstruction of Ford Dry Lake over the last 14,000 years, as specified in the PTNCL documentation and possible NRHP nomination program. Any buried archaeological deposits that are found during the course of ground disturbance would be subject to the discovery protocol in **CUL-11**.

C.3.7 NOTEWORTHY PUBLIC BENEFITS

In the case of the proposed GSEP, very little is known about the prehistory of the Mojave Desert. Even less is known in this specific area of the Mojave-Colorado desert interface area. All that is known comes primarily from surface manifestations of localized sites. Little to nothing has been done regarding the relationships between local sites, trails, quarries, and now ephemeral bodies of water (i.e. Lake Cahuilla, Ford Dry Lake, Palen Dry Lake) and the springs and oases along the I-10 corridor. Data recovery associated with the proposed project or its alternatives has the potential to contribute to our knowledge of the ancient peoples who lived near Ford Dry Lake. As such, data recovery may provide some public benefits in the form of information.

C.3.8 COMPLIANCE WITH LORS

If the conditions of certification above are properly implemented, the proposed GSEP would result in a less-than-significant impact on known and newly found archaeological

resources. However, impacts to ethnographic resources such as those in the PTNCL may result in significant unavoidable impacts that cannot be fully mitigated. In addition, despite the correct implementation of the mitigation measures outlined here, GSEPs incremental contribution to cumulative impacts to cultural resources would be cumulatively considerable.

Nonetheless, the project would be in compliance with the applicable state laws, ordinances, regulations, and standards listed in **Cultural Resources Table 1**.

The County of Riverside's General Plan has language promoting the general county-wide preservation of cultural resources. The Programmatic Agreement requires specific actions not just to promote but to effect historic preservation and mitigate impacts to all cultural resources in order to ensure NEPA and CEQA compliance. Consequently, if GSEP implements these conditions, its actions would be consistent with the general historic preservation goals of the County of Riverside.

C.3.9 RESPONSE TO AGENCY AND PUBLIC COMMENTS

Energy Commission staff has, as of the drafting of the present document, received one comment that explicitly relates to the analysis of cultural resources.

PUBLIC COMMENT

This comment is a submission by the California Unions for Reliable Energy (CURE), dated May 13, 2010:

> "The SA/DEIS acknowledges that McCoy Spring may be a traditional cultural property, and therefore the Project may have a significant impact on "the integrity of association, setting, and feeling of this resource." However, the SA/DEIS does not include an analysis of the Project's potentially significant impacts to McCoy Spring. Rather, the SA/DEIS states that a determination on the issue will be included in a supplemental staff assessment, along with any necessary mitigation measures, because possible impacts must be considered from the perspective of Native Americans.
>
> CURE is sensitive to the fact that further information could be obtained from Native Americans. However, information already exists that enables Staff to conduct the analysis and conclude that the impact will be significant. Furthermore, the SA/DEIS states that an ethnographer could formally evaluate McCoy Spring for its eligibility for listing as a traditional cultural property. Thus, the analysis can and must be performed, and included in a Revised SA that is circulated for public review and comment" (CURE 2010, p.14).
>
> "The SA/DEIS also entirely fails to address cumulative impacts to cultural resources. The SA/DEIS states that it did not include a cumulative impact analysis for cultural resources because the data

compilation is incomplete. The SA/DEIS fails to comply with the requirements of CEQA" (CURE 2010, p. 15).

STAFF RESPONSE

Staff agrees with CURE that a formal evaluation of McCoy Springs National Register District and other PTNCL contributors by Native Americans and/or an ethnographer would be ideal. Indeed, staff is uncertain why this evaluation was not suggested by Tetra Tech in 2007 when the GSEP cultural resources reviews were initiated. However, for federally funded projects where impacts and mitigation for cultural resources involves Native Americans, a formal government-to-government consultation process is required. This formal process often excludes state agencies such as the Energy Commission from active participation. This is particularly the case for the GSEP permitting process where the current Energy Commission staff assessment will be published prior to the completion of the PA and FEIS required under federal law. Staff is confident that BLM will provide appropriate mitigation in these documents.

CURE mentions that additional information about McCoy Springs National Register District "could" be obtained from Native Americans as part of staff's evaluation of the impacts to this resource. Staff suggests that CURE has misunderstood this portion of cultural resource law. As mentioned in earlier parts of this document, impacts to an ethnographic resource or traditional cultural property and the severity of those impacts can only be identified by an expert in the behavior, beliefs, and knowledge germane to understanding the resource's cultural significance. Only members of the community who value the resource culturally and/or spiritually, in this case Native Americans, can determine impacts and suggest possible mitigation. Therefore, additional information must be obtained from Native Americans. Consultation is a time-consuming process that cannot necessarily be forced to fit bureaucratic schedules.

CURE further suggests that "information already exists" that would allow staff to complete an analysis regarding the impacts to McCoy Spring National Register District. Staff did receive an expression of concern regarding impacts to McCoy Spring from Alfredo Acosta Figueroa, a member of the La Cuna de Aztlan Sacred Sites Protection Circle. However, staff does not consider a single response to be sufficient information to complete an analysis. This resource is undoubtedly important to many individuals and groups which may or may not agree with Mr. Figueroa. Further, agreement on the nature of the impacts and what should be done to mitigate them may not be undisputed. The negotiation of these issues is the purpose of the federal NHPA Section 106 process. The results of these negotiations will be included in BLM's PA.

Staff has included a cumulative analysis in the present document. CURE and the public at large now have the opportunity to review and comment on the entire cultural resources management program and the complete analysis that is the basis for that program.

C.3.10 CONCLUSIONS AND RECOMMENDATIONS

Staff concludes that the proposed GSEP would have a significant direct impact on 27 register-eligible archaeological resources and significant indirect impact on 248 contributors to a register-eligible cultural landscape. These impacts include direct

impacts to 6 prehistoric-to-historic-period Native American archaeological sites; direct impacts to 6 and indirect impacts to 248 prehistoric-to-historic-period Native American archaeological sites that are potential contributing elements to the PTNCL; and direct impacts to 15 historic-period archaeological sites that are potential contributing elements to the DTCCL. Because the GSEP would impact contributors to the PTNCL and the DTCCL, it would also therefore impact these register-eligible resources.

To mitigate these impacts, staff recommends that the Commission adopt cultural resources Conditions of Certification **CUL-1** through **CUL-17**. **CUL-1** and **CUL-2** would fund programs to define, document, and nominate to the NRHP two cultural landscapes that GSEP shares with two other nearby solar projects, identifying specialists who would be hired to supervise the mitigation of GSEP's cumulative impacts to these resources and establishing a fund, to which multiple project owners will contribute, to hire these specialists. **CUL-3** through **CUL-17** would mitigate GSEP's direct and indirect impacts to the cultural resources specific to the project. **CUL-3** and **CUL-4** are administrative conditions that set out who the people would be who will implement the balance of the conditions, what are their qualifications and roles would be, and the information the project owner would supply them to help them fulfill those roles. **CUL-5** provides for the preparation and implementation of the Cultural Resources Monitoring and Mitigation Plan (CRMMP), which would structure and govern the implementation of the broader treatment program. **CUL-6** provides for the preparation of a final report to analyze, interpret, and document the ultimate results of the whole GSEP cultural resources management program. **CUL-7** would provide training of project personnel to identify, protect, and provide appropriate notice about known and new potential cultural resources in the project construction area. **CUL-8** and **CUL-9** would provide construction monitoring and cultural resources discovery protocols. **CUL-10** through **CUL-13** and **CUL-17** are treatment conditions for direct impacts to historic-period and prehistoric resources that would reduce the severity of GSEP impacts to less-than-significant.

The respective adoption and implementation of **CUL-14** through **CUL-16** would reduce some of the potential indirect impacts of the proposed project on PTNCL contributors to less-than-significant. However, as of the publication date of this document, the indirect impacts to the contributing elements of the PTNCL have only been partially identified. Other indirect ethnographic impacts can be identified only by members of the community who value the resources culturally and/or spiritually, in this case Native Americans. BLM is currently in the process of consulting with local Native American groups regarding impacts and potential mitigation for the GSEP project area. The results of these negotiations will be formalized in a Programmatic Agreement, as required by Section 106 of the NHPA. Therefore, staff's recommended conditions may be revised, based on BLM's finalized PA, which, it is anticipated, will address the issues of unidentified indirect impacts and appropriate ways to mitigate them, and coordinate Energy Commission and BLM cultural resources mitigation measures.

In conclusion, with the adoption and implementation of the entire complement of cultural resources conditions, Conditions of Certification **CUL-1** through **CUL-17**, the GSEP project would be in conformity with all applicable LORS. **CUL-1** and **CUL-2** would reduce the cumulative impacts to the greatest extent possible, but these impacts would nonetheless be cumulatively considerable. **CUL-3** through **CUL-17** would reduce the

direct impacts to less than significant. In addition, the impacts to ethnographic resources have not yet been evaluated. Consequently, staff does not know if these resources are significant, or if any mitigation is needed or appropriate. However, significant unavoidable indirect impacts to ethnographic resources that cannot be fully mitigated may be possible. Only with the resolution of those impacts in the BLM's Programmatic Agreement, reflecting Native American identification of additional indirect impacts and recommendation of appropriate mitigation of those impacts, would GSEP's indirect impacts be reduced to a level less than significant. This resolution cannot be guaranteed, however.

Energy Commission staff's recommended Conditions of Certification **CUL-1** through **CUL-17** reflect staff's assessment of what constitutes appropriate mitigation, under CEQA, for GSEP's identified impacts to register-eligible cultural resources. Staff recognizes that BLM's parallel process for resolving adverse effects (consultation resulting in a PA) is somewhat different from the CEQA process. Staff recommends that BLM incorporate staffs recommended conditions of certification into the GSEP PA and its associated plan documents to ensure that the project's impacts to cultural resources are mitigated in a way that meets both federal and state requirements.

C.3.11 RECOMMENDED CONDITIONS OF CERTIFICATION

CUL-1 PREHISTORIC TRAILS NETWORK CULTURAL LANDSCAPE (PTNCL) DOCUMENTATION AND POSSIBLE NRHP NOMINATION

The project owner shall contribute to a special fund set up by the Energy Commission to finance the completion of the PTNCL Documentation and Possible NRHP Nomination program presented in the Genesis Solar Energy Project Revised Staff Assessment.

The amount of the contribution shall be $35 per acre that the project encloses or otherwise disturbs.

An additional contribution may be required to ensure the completion of the required documentation and possible NRHP nomination.

If a project is not certified, or if a project owner does not build the project, or if for some other reason deemed acceptable by the CPM, a project owner does not participate in funding the PTNCL documentation and possible NRHP nomination program, the other project owner(s) may consult with the CPM to adjust the scale of the PTNCL documentation and possible NRHP nomination program research activities to match available funding. A project owner that funds the PTNCL documentation and possible NRHP nomination program, then withdraws, will be able to reclaim their monetary contribution, to be refunded on a prorated basis.

Verification:

1. No later than 10 days after receiving notice of the successful transfer of funds to the Energy Commission's special PTNCL fund, the project owner shall submit a copy of the notice to the Energy Commission's Compliance Project Manager (CPM).

CUL-2 DESERT TRAINING CENTER CALIFORNIA-ARIZONA MANEUVER AREA CULTURAL LANDSCAPE (DTCCL) DOCUMENTATION AND POSSIBLE NRHP NOMINATION

The project owner shall contribute to a special fund set up by the Energy Commission to finance the completion of the Documentation and Possible NRHP Nomination program presented in the Genesis Solar Energy Project Revised Staff Assessment.

The amount of the contribution shall be $25 per acre that the project encloses or otherwise disturbs.

An additional contribution may be required to ensure the completion of the required documentation and possible NRHP nomination.

If a project is not certified, or if a project owner does not build the project, or if for some other reason deemed acceptable by the CPM, a project owner does not participate in funding the DTCCL documentation and possible NRHP nomination program, the other project owner(s) may consult with the CPM to adjust the scale of the DTCCL documentation and possible NRHP nomination program research activities to match available funding. A project owner that funds the DTCCL documentation and possible NRHP nomination program, then withdraws, will be able to reclaim their monetary contribution, to be refunded on a prorated basis.

Verification:

1. No later than 10 days after receiving notice of the successful transfer of funds to the Energy Commission's special DTCCL fund, the project owner shall submit a copy of the notice to the CPM.

CUL-3 CULTURAL RESOURCES PERSONNEL

Prior to the start of ground disturbance (includes "preconstruction site mobilization," "ground disturbance," and "construction grading, boring, and trenching," as defined in the General Conditions for this project), the project owner shall obtain the services of a Cultural Resources Specialist (CRS), one or more alternate CRSs, if alternates are needed, and the four technical specialists identified below in this condition.

The CRS shall manage all cultural resources mitigation, monitoring, curation, and reporting activities in accordance with the Conditions of Certification (Conditions). The CRS shall have a primarily administrative and coordinating role for the GSEP project. The project owner shall ensure that the CRS implements the cultural resources conditions, providing for data recovery from known historical resources, and shall ensure that the CRS makes

recommendations regarding the eligibility for listing in the California Register of Historical Resources (CRHR) of any cultural resources that are newly discovered or that may be impacted in an unanticipated manner. The CRS may obtain the services of field crew members and cultural resources monitors (CRMs), if needed, to assist in mitigation, monitoring, and curation activities. No ground disturbance shall occur prior to CPM approval of the CRS and alternates, unless such activities are specifically approved by the CPM. Approval of a CRS may be denied or revoked for reasons including but not limited to non-compliance on this or other Energy Commission projects.

CULTURAL RESOURCES SPECIALIST

The resumes for the CRS and alternate(s) shall include information demonstrating to the satisfaction of the CPM that their training and backgrounds conform to the U.S. Secretary of Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, part 61. In addition, the CRS shall have the following qualifications:

1. A background in anthropology and prehistoric archaeology;

2. At least 10 years of archaeological resource mitigation and field experience, with at least 3 of those years in California; and

3. At least 3 years of experience in a decision-making capacity on cultural resources projects, with at least 1 of those years in California, and the appropriate training and experience to knowledgably make recommendations regarding the significance of cultural resources.

REQUIRED CULTURAL RESOURCES TECHNICAL SPECIALISTS

The project owner shall ensure that the CRS obtains the services of a qualified prehistoric archaeologist to conduct the research specified in **CUL-10** and **CUL-12**. The Project Prehistoric Archaeologist's (PPA) training and background must meet the U.S. Secretary of the Interior's Professional Qualifications Standards for prehistoric archaeology, as published in Title 36, Code of Federal Regulations, part 61, and the resume of the PPA must demonstrate familiarity with the artifacts and environmental modifications (deliberate and incidental) associated with the prehistoric and protohistoric use of the Chuckwalla Valley.

The project owner shall also ensure that the CRS obtains the services of a senior supervisory archaeologist to conduct the research and activities specified in **CUL-11**. This archaeologist may be the PPA or a different individual, at the discretion of the CRS. The Project Senior Supervisory Archaeologist (PSSA) must have training and background that meets the U.S. Secretary of the Interior's Professional Qualifications Standards for prehistoric archaeology, as published in Title 36, Code of Federal Regulations, part 61. In addition this person shall have a resume that demonstrates experience in the archaeology of the Sonoran Desert, particularly in excavating prehistoric structures and other features preserved in depositional contexts and

experience supervising projects where mechanical excavation was an essential part of the project. This individual shall also meet OSHA standards as a “Competent Person” in trench safety. This individual will work closely with the backhoe operator described below, and the two shall constitute the archaeologist/backhoe-operator team needed for the activities specified in **CUL-11**.

The project owner shall ensure that the CRS obtains the services of a specialist backhoe operator to conduct the activities specified in **CUL-11**. This backhoe operator shall have a resume that demonstrates previous experience using a backhoe in coordination with an archaeologist. In addition the operator shall use a machine with a “stripping bucket” that is sensitive enough to remove even and consistent layers of sediment 5 cm thick.

The project owner shall ensure that the CRS obtains the services of a qualified ethnographer to conduct the research and activities specified in **CUL-16,** if one is not hired by the PTNCL PI for the overall duties as described in the PTNCL documentation and possible NRHP nomination program. The Project Ethnographer’s (PE) training and background must meet the NPS standards for Anthropologist/Applied Ethnographer (GS-190, 11-12 or 13-15). The PE must have already established long-term relationships with Native American groups whose traditional territories are near GSEP.

The project owner shall ensure that the CRS obtains the services of a qualified historical archaeologist to conduct the research specified in **CUL-17**. The Project Historical Archaeologist’s (PHA) training and background must meet the U.S. Secretary of Interior’s Professional Qualifications Standards for historical archaeology, as published in Title 36, Code of Federal Regulations, part 61. The resume of the PHA must demonstrate familiarity with the artifacts, environmental modifications (deliberate and incidental, including tank tracks), and trash disposal patterns associated with World War II land-based army activities, and knowledge of the full range of late nineteenth and early-to-mid-twentieth-century domestic can, bottle, and ceramic diagnostic traits.

The project owner shall ensure that the CRS obtains the services of a qualified geoarchaeologist to conduct the research specified in **CUL-8**, **CUL-10**, and **CUL-11**. The resume of the proposed Project Geoarchaeologist (PG) shall demonstrate that the PG’s training and background meet the U.S. Secretary of Interior’s Professional Qualifications Standards for prehistoric archaeology, as published in Title 36, Code of Federal Regulations, part 61, and show the completion of graduate-level coursework in geoarchaeology or Quaternary science.

The resumes of the CRS, alternate CRS, the PSSA, PPA, PE, PHA, and PG shall include the names and telephone numbers of contacts familiar with the work of these persons on projects referenced in the resumes and

demonstrate to the satisfaction of the CPM that these persons have the appropriate training and experience to undertake the required research.

FIELD CREW MEMBERS AND CULTURAL RESOURCES MONITORS

CRMs and field crew members shall have the following qualifications:

1. A B.S. or B.A. degree in anthropology, archaeology, historical archaeology, or a related field, and one year experience monitoring in California; or

2. An A.S. or A.A. degree in anthropology, archaeology, historical archaeology, or a related field, and four years experience monitoring in California; or

3. Enrollment in upper division classes pursuing a degree in the fields of anthropology, archaeology, historical archaeology, or a related field, and two years of monitoring experience in California.

4. CRMs monitoring GSEP linear corridor and secondary road construction will also have demonstrated experience in identifying Sonoran desert prehistoric features such as structures, pits, canals, and wells in the walls of backhoe trenches.

Verification:

1. At least 180 days prior to the start of ground disturbance, the project owner shall submit the resumes for the CRS, the alternate CRS(s) if desired, the PSSA, the PPA, the PE (if needed), the PHA, and the PG to the CPM for review and approval.

2. At least 10 days prior to the start of data recovery on known archaeological sites, the project owner shall confirm in writing to the CPM that the approved CRS, the PSSA, the PPA, the PE (if needed), the PHA, and the PG will be available for on-site work and are prepared to implement the cultural resources Conditions **CUL-8**, **CUL-10**, **CUL-11**, **CUL-12**, and **CUL-17**.

3. At least 10 days prior to a termination or release of the CRS, or within 10 days after the resignation of a CRS, the project owner shall submit the resume of the proposed new CRS to the CPM for review and approval. At the same time, the project owner shall also provide to the proposed new CRS the AFC and all cultural resources documents, field notes, photographs, and other cultural resources materials generated by the project. If no alternate CRS is available to assume the duties of the CRS, a monitor may serve in place of a CRS so that ground disturbance may continue up to a maximum of 3 days without a CRS. If cultural resources are discovered then ground disturbance will remain halted until there is a CRS or alternate CRS to make a recommendation regarding significance.

4. At least 20 days prior to data recovery on known archaeological sites, the CRS shall provide a letter naming anticipated field crew members for the project and attesting that the identified field crew members meet the minimum qualifications for cultural resources data recovery required by this Condition.

5. At least 20 days prior to ground disturbance, the CRS shall provide a letter naming CRMs for the project and attesting that the identified CRMs meet the minimum qualifications for cultural resources monitoring required by this Condition.

6. At least 5 days prior to additional field crew members and CRMs beginning duties during the project, the CRS shall provide letters to the CPM identifying the new field crew members and CRMs and attesting to their qualifications.

CUL-4 PROJECT DOCUMENTS FOR CULTURAL RESOURCES PERSONNEL

Prior to the start of ground disturbance, the project owner shall provide the PTNCL PI, the DCTCL PI, the CRS, the PSSA, the PPA, the PE, the PHA, and the PG with copies of the AFC, data responses, confidential cultural resources documents, the Revised Staff Assessment (RSA), and the RSA Supplement/Errata, if any, for the project. The project owner shall also provide the CRS, the PSSA, the PPA, the PE, the PHA, the PG, and the CPM with maps and drawings showing the footprints of the power plant, all linear facility routes, all access roads, and all laydown areas. Maps shall include the appropriate USGS quadrangles and maps at an appropriate scale (e.g., 1:2400 or 1" = 200') for plotting cultural features or materials. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS and CPM. Staff shall review map submittals and, in consultation with the CRS, approve those that are appropriate for use in cultural resources planning activities. No ground disturbance shall occur prior to CPM approval of maps and drawings, unless such activities are specifically approved by the CPM.

If construction of the project would proceed in phases, maps and drawings not previously provided shall be provided to the CRS, the PSSA, the PPA, the PHA, the PG, and CPM prior to the start of each phase. Written notice identifying the proposed schedule of each project phase shall be provided to the CRS and CPM.

Weekly, until ground disturbance is completed, the project construction manager shall provide to the CRS and CPM a schedule of project activities for the following week, including the identification of area(s) where ground disturbance will occur during that week.

The project owner shall notify the CRS and CPM of any changes to the scheduling of the construction phases.

Verification:

1. At least 210 days prior to the start of ground disturbance, the project owner shall provide the AFC, data responses, confidential cultural resources documents, the Revised Staff Assessment (RSA), and RSA Errata to the PTNCL PI and the DCTCL PI.

2. At least 165 days prior to the start of ground disturbance, the project owner shall provide the AFC, data responses, confidential cultural resources documents, the Revised Staff Assessment (RSA), and RSA Supplement/Errata to the CRS, if

needed, and to the PSSA, the PPA, the PHA, and the PG. The project owner shall also provide the subject maps and drawings to the CRS, PSSA, PPA, PE, PHA, PG, and CPM. Staff, in consultation with the CRS, PSSA, PPA, and PHA, will review and approve maps and drawings suitable for cultural resources monitoring and data recovery activities.

3. At least 15 days prior to the start of ground disturbance, if there are changes to any project-related footprint, the project owner shall provide revised maps and drawings for the changes to the CRS, PSSA, PPA, PHA, and CPM.

4. At least 15 days prior to the start of each phase of a phased project, the project owner shall submit the appropriate maps and drawings, if not previously provided, to the CRS, PSSA, PPA, PHA, PG, and CPM.

5. Weekly, during ground disturbance, a current schedule of anticipated project activity shall be provided to the CRS and CPM by letter, e-mail, or fax.

6. Within 5 days of changing the scheduling of phases of a phased project, the project owner shall provide written notice of the changes to the CRS and CPM.

CUL-5 CULTURAL RESOURCES MONITORING AND MITIGATION PLAN

Prior to the start of ground disturbance, the project owner shall submit to the CPM for review and approval the Cultural Resources Monitoring and Mitigation Plan (CRMMP), as prepared by or under the direction of the CRS, with the contributions of the PSSA, the PPA, the PHA, PE, and the PG. The authors' name(s) shall appear on the title page of the CRMMP. The CRMMP shall specify the impact mitigation protocols for all known cultural resources and identify general and specific measures to minimize potential impacts to all other cultural resources, including those discovered during construction. Implementation of the CRMMP shall be the responsibility of the CRS and the project owner. Copies of the CRMMP shall reside with the CRS, alternate CRS, the PSSA, the PPA, the PHA, the PE, the PG, each CRM, and the project owner's on-site construction manager. No ground disturbance shall occur prior to CPM approval of the CRMMP, unless such activities are specifically approved by the CPM.

The CRMMP shall include, but not be limited to, the elements and measures listed below.

1. The following statement shall be included in the Introduction: "Any discussion, summary, or paraphrasing of the Conditions of Certification in this CRMMP is intended as general guidance and as an aid to the user in understanding the Conditions and their implementation. The conditions, as written in the Commission Decision, shall supersede any summarization, description, or interpretation of the conditions in the CRMMP. The Cultural Resources Conditions of Certification from the Commission Decision are contained in Appendix A."

2. The duties of the CRS shall be fully discussed, including coordination duties with respect to the completion of the Prehistoric Trails Network

Cultural Landscape (PTNCL) documentation and possible NRHP nomination program and the Desert Training Center California-Arizona Maneuver Area Cultural Landscape (DTCCL) documentation and possible NRHP nomination program, and oversight/management duties with respect to site evaluation, data collection, monitoring, and reporting at both known prehistoric and historic-period archaeological sites and any CRHR-eligible (as determined by the CPM) prehistoric and historic-period archaeological sites discovered during construction.

3. A general research design shall be developed that:
   a. Charts a timeline of all research activities, including those coordinated under the PTNCL and DTCCL documentation and possible NRHP nomination programs;

   b. Recapitulates the paleoenvironmental, prehistoric, ethnohistoric, ethnographic, and historic contexts developed in the PTNCL and DTCCL documentation and possible NRHP nomination programs and adds to these the additional context of the non-military, historic-period occupation and use of the Chuckwalla Valley, to create a comprehensive historic context for the BSPP vicinity;

   c. Poses archaeological research questions and testable hypotheses specifically applicable to the archaeological data sets known for the Chuckwalla Valley, based on the results of the research conducted under the PTNCL and DTCCL documentation and possible NRHP nomination programs and on the archaeological and historical literature pertinent to the Chuckwalla Valley; and

   d. Clearly articulates why it is in the public interest to address the research questions that it poses.

4. Protocols, reflecting the guidance provided in **CUL-3**, **CUL-10**, **CUL-11**, **CUL-12**, **CUL-16**, and **CUL-17** shall be specified for the data recovery from known prehistoric and historic-period archaeological resources.

5. Artifact collection, retention/disposal, and curation policies shall be discussed, as related to the research questions formulated in the research design. These policies shall apply to cultural resources materials and documentation resulting from evaluation and data recovery at both known prehistoric and historic-period archaeological sites and any CRHR-eligible (as determined by the CPM) prehistoric and historic-period archaeological sites discovered during construction. A prescriptive treatment plan may be included in the CRMMP for limited data types.

6. The implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the ground-disturbance and post-ground–disturbance analysis phases of the project shall be specified.

7. Person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team shall be identified.

8. The manner in which Native American observers or monitors will be included, in addition to their roles in the activities required under **CUL-1**, the procedures to be used to select them, and their roles and responsibilities shall be described.

9. All impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during ground disturbance, construction, and/or operation shall be described. Areas where these measures are to be implemented shall be identified. The description shall address how these measures would be implemented prior to the start of ground disturbance and how long they would be needed to protect the resources from project-related impacts. These measures shall reflect the guidance provided in **CUL-13**.

10. The commitment to record on Department of Parks and Recreation (DPR) 523 forms, to map, and to photograph all encountered cultural resources over 50 years of age shall be stated. In addition, the commitment to curate all archaeological materials retained as a result of the archaeological investigations (survey, testing, data recovery), in accordance with the California State Historical Resources Commission's *Guidelines for the Curation of Archaeological Collections*, into a retrievable storage collection in a public repository or museum shall be stated.

11. The commitment of the project owner to pay all curation fees for artifacts recovered and for related documentation produced during cultural resources investigations conducted for the project shall be stated. The project owner shall identify three possible curation facilities that could accept cultural resources materials resulting from BSPP cultural resources investigations.

12. The CRS shall attest to having access to equipment and supplies necessary for site mapping, photography, and recovery of all cultural resource materials (that cannot be treated prescriptively) from known CRHR-eligible archaeological sites and from CRHR-eligible sites that are encountered during ground disturbance .

13. The contents, format, and review and approval process of the final Cultural Resource Report (CRR) shall be described.

Verification:

1. At least 120 days prior to the start of ground disturbance, the project owner shall submit the CRMMP to the CPM for review and approval.

2. At least 90 days prior to the start of ground disturbance, in a letter to the CPM, the project owner shall agree to pay curation fees for any materials generated or

collected as a result of the archaeological investigations (survey, testing, data recovery).

3. At least 45 days prior to the initiation of ground disturbance, the project owner shall provide to the CPM a copy of a letter from a curation facility that meets the standards stated in the California State Historical Resources Commission's *Guidelines for the Curation of Archaeological Collections*, stating the facility's willingness and ability to receive the materials generated by GSEP cultural resources activities and requiring curation. Any agreements concerning curation will be retained and available for audit for the life of the project.

CUL-6 CULTURAL RESOURCES REPORT (CRR)

The project owner shall submit the final Cultural Resources Report (CRR) to the CPM for review and approval and to the BLM Palm Springs archaeologist for review and comment. The final CRR shall be written by or under the direction of the CRS. The final CRR shall report on all field activities including dates, times and locations, results, samplings, and analyses. All survey reports, revised and final Department of Parks and Recreation (DPR) 523 forms, data recovery reports, and any additional research reports not previously submitted to the California Historical Resource Information System (CHRIS) and the State Historic Preservation Officer (SHPO) shall be included as appendices to the final CRR.

If the project owner requests a suspension of ground disturbance and/or construction activities, then a draft CRR that covers all cultural resources activities associated with the project shall be prepared by the CRS and submitted to the CPM and to the BLM Palm Springs archaeologist for review and approval on the same day as the suspension/extension request. The draft CRR shall be retained at the project site in a secure facility until ground disturbance and/or construction resumes or the project is withdrawn. If the project is withdrawn, then a final CRR shall be submitted to the CPM for review and approval at the same time as the withdrawal request.

Verification:

1. Within 30 days after requesting a suspension of construction activities, the project owner shall submit a draft CRR to the CPM for review and approval.

2. Within 180 days after completion of ground disturbance (including landscaping), the project owner shall submit the final CRR to the CPM for review and approval and to the BLM Palm Springs Field Office archaeologist for review and approval. If any reports have previously been sent to the CHRIS, then receipt letters from the CHRIS or other verification of receipt shall be included in an appendix.

3. Within 10 days after the CPM and the BLM Palm Springs Field Office archaeologist approve the CRR, the project owner shall provide documentation to the CPM confirming that copies of the final CRR have been provided to the SHPO, the CHRIS, the curating institution, if archaeological materials were collected, and to the Tribal Chairpersons of any Native American groups requesting copies of project-related reports.

CUL-7 WORKER ENVIRONMENTAL AWARENESS PROGRAM (WEAP)

Prior to and for the duration of ground disturbance, the project owner shall provide Worker Environmental Awareness Program (WEAP) training to all new workers within their first week of employment at the project site, along the linear facilities routes, and at laydown areas, roads, and other ancillary areas. The training shall be prepared by the CRS in consultation with local Native Americans and shall incorporate the traditions and beliefs of local Native American groups into the presentation. If consultation with local Native Americans is not possible, the CRS shall consult, instead, with an ethnographer, either the PTNCL Ethnographer or the GSEP PE, on the content of the presentation. The presentation may be conducted by any member of the archaeological team and a Native American, if possible (preferably the Native American serving as a construction monitor under **CUL-8**), and may be presented in the form of a video. A consulting fee or honorarium shall be negotiated with the local Native American consultants and presenter and paid to them for their participation. The CRS shall be available (by telephone or in person) to answer questions posed by employees. The training may be discontinued when ground disturbance is completed or suspended, but must be resumed when ground disturbance, such as landscaping, resumes.

The training shall include:

1. A discussion of applicable laws and penalties under the law;

2. Samples or visuals of artifacts that might be found in the project vicinity;

3. A discussion of what such artifacts may look like when partially buried, or wholly buried and then freshly exposed;

4. A discussion of what prehistoric and historical archaeological deposits look like at the surface and when exposed during construction, and the range of variation in the appearance of such deposits;

5. A discussion of what local Native American beliefs are, how those beliefs are related to archaeological resources that may be found in the area, and the appropriate respectful behavior towards sacred places and objects;

6. Instruction that the CRS, alternate CRS, and CRMs have the authority to halt ground disturbance in the area of a discovery to an extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS;

7. Instruction that employees are to avoid areas flagged as sensitive for cultural resources;

8. Instruction that employees are to halt work on their own in the vicinity of a potential cultural resources discovery and shall contact their supervisor

and the CRS or CRM, and that redirection of work would be determined by the construction supervisor and the CRS;

9. An informational brochure that identifies reporting procedures in the event of a discovery;

10. An acknowledgement form signed by each worker indicating that they have received the training; and

11. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

No ground disturbance shall occur prior to implementation of the WEAP program, unless such activities are specifically approved by the CPM.

Verification:

1. At least 30 days prior to the beginning of ground disturbance, the CRS shall provide the training program draft text and graphics and the informational brochure to the CPM for review and approval.

2. At least 15 days prior to the beginning of ground disturbance, the CPM will provide to the project owner a WEAP Training Acknowledgement form for each WEAP-trained worker to sign.

3. Monthly, until ground disturbance is completed, the project owner shall provide in the Monthly Compliance Report (MCR) the WEAP Training Acknowledgement forms of workers who have completed the training in the prior month and a running total of all persons who have completed training to date.

CUL-8 CONSTRUCTION MONITORING PROGRAM

Staff expects the Qoaf alluvium to be reached during grading across most of the site. The project owner shall ensure that the CRS, alternate CRS, or CRMs monitor full time all ground disturbance, if allowed by the BLM, until the CRS, alternate CRS, or CRMs certify that the **sterile Qoaf alluvium** has been reached. This will include ground disturbance at the project site, along the linear facilities routes, and at laydown areas, roads, and other ancillary areas, to ensure there are no impacts to undiscovered resources and to ensure that known resources are not impacted in an unanticipated manner.

During utility trenching along the linear corridor, which is expected to reach a depth of 10 feet, the face of each trench shall be examined for features. As described in **CUL-3**, monitoring will be conducted by a CRM with demonstrated experience in identifying buried features in backhoe trench walls in Sonoran Desert depositional contexts. In addition, while the utility trench is open, the owner shall arrange for a geoarchaeologist with qualifications described in **CUL-3** to observe the exposed stratigraphy. This specialist shall collect information and samples that will aid in the paleo-environmental reconstruction of Ford Dry Lake over the last 14,000 years, as

specified in the PTCNL documentation and possible NRHP nomination program funded under **CUL-1**.

Full-time archaeological monitoring for this project shall be the archaeological monitoring of the earth-removing activities in the areas specified in the previous paragraph, for as long as the activities are ongoing. Where excavation equipment is actively removing dirt and hauling the excavated material farther than 50 feet from the location of active excavation, full-time archaeological monitoring shall require at least two monitors per excavation area. In this circumstance, one monitor shall observe the location of active excavation and a second monitor shall inspect the dumped material. For excavation areas where the excavated material is dumped no farther than fifty feet from the location of active excavation, one monitor shall both observe the location of active excavation and inspect the dumped material.

In the event that the CRS believes that the required number of monitors is not appropriate in certain locations, a letter or e-mail detailing the justification for changing the number of monitors shall be provided to the CPM for review and approval prior to any change in the number of monitors.

The project owner shall obtain a Native American monitor to monitor ground disturbance if local Native American groups so request. Contact lists of interested Native Americans and guidelines for monitoring shall be obtained from the Native American Heritage Commission. Preference in selecting a monitor shall be given to Native Americans with traditional ties to the area that shall be monitored. If efforts to obtain the services of a qualified Native American monitor are unsuccessful, the project owner shall immediately inform the CPM. Staff will either identify potential monitors or will allow ground disturbance to proceed without a Native American monitor.

The research design in the CRMMP shall govern the collection, treatment, retention/disposal, and curation of any archaeological materials encountered.

On forms provided by the CPM, CRMs shall keep a daily log of any monitoring and other cultural resources activities and any instances of non-compliance with the Conditions and/or applicable LORS. Copies of the daily monitoring logs shall be provided by the CRS to the CPM, if requested by the CPM. From these logs, the CRS shall compile a monthly monitoring summary report to be included in the MCR. If there are no monitoring activities, the summary report shall specify why monitoring has been suspended.

The CRS or alternate CRS shall report daily to the CPM on the status of the project's cultural resources-related activities, unless reducing or ending daily reporting is requested by the CRS and approved by the CPM.

In the event that the CRS believes that the current level of monitoring is not appropriate in certain locations, a letter or e-mail detailing the justification for changing the level of monitoring shall be provided to the CPM for review and approval prior to any change in the level of monitoring.

The CRS, at his or her discretion, or at the request of the CPM, may informally discuss cultural resources monitoring and mitigation activities, including PTNCL sites monitoring, with Energy Commission technical staff.

Cultural resources monitoring activities, including PTNCL sites monitoring, are the responsibility of the CRS. Any interference with monitoring activities, removal of a monitor from duties assigned by the CRS, or direction to a monitor to relocate monitoring activities by anyone other than the CRS shall be considered non-compliance with these Conditions.

Upon becoming aware of any incidents of non-compliance with the Conditions and/or applicable LORS, the CRS and/or the project owner shall notify the CPM by telephone or e-mail within 24 hours. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the Conditions. When the issue is resolved, the CRS shall write a report describing the issue, the resolution of the issue, and the effectiveness of the resolution measures. This report shall be provided in the next MCR for the review of the CPM.

Verification:

1. At least 30 days prior to the start of ground disturbance, the CPM will provide to the CRS an electronic copy of a form to be used as a daily monitoring log.

2. Within 15 days of receiving from a local Native American group a request that a Native American monitor be employed, the project owner shall submit a copy of the request and a copy of a response letter to the group notifying them that a Native American monitor has been employed and identifying the Native American monitor.

3. Monthly, while monitoring is on-going, the project owner shall include in each MCR a copy of the monthly summary report of cultural resources-related monitoring prepared by the CRS and shall attach any new DPR 523A forms completed for finds treated prescriptively, as specified in the CRMMP.

4. At least 24 hours prior to implementing a proposed change in monitoring level, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS's justification for changing the monitoring level.

5. Daily, as long as no cultural resources are found, the CRS shall provide a statement that "no cultural resources over 50 years of age were discovered" to the CPM as an e-mail or in some other form of communication acceptable to the CPM.

6. At least 24 hours prior to reducing or ending daily reporting, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS's justification for reducing or ending daily reporting.

7. No later than 30 days following the discovery of any Native American cultural materials, the project owner shall submit to the CPM copies of the information transmittal letters sent to the Chairpersons of the Native American tribes or groups who requested the information. Additionally, the project owner shall submit to the CPM copies of letters of transmittal for all subsequent responses to Native American requests for notification, consultation, and reports and records.

8. Within 15 days of receiving them, the project owner shall submit to the CPM copies of any comments or information provided by Native Americans in response to the project owner's transmittals of information.

CUL-9 AUTHORITY TO HALT CONSTRUCTION; TREATMENT OF DISCOVERIES

The project owner shall grant authority to halt ground disturbance to the CRS, alternate CRS, PSSA, PPA, PHA, PG, PE, and the CRMs in the event of a discovery of a cultural resource over 50 years of age, or younger if determined to be exceptionally significant by the CPM. Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor in consultation with the CRS.

In the event that a cultural resource over 50 years of age is found (or if younger, determined exceptionally significant by the CPM), or impacts to such a resource can be anticipated, ground disturbance shall be halted or redirected in the immediate vicinity of the discovery sufficient to ensure that the resource is protected from further impacts. Monitoring and daily reporting, as provided in other conditions, shall continue during the project's ground-disturbing activities elsewhere. The halting or redirection of ground disturbance shall remain in effect until the CRS has visited the discovery, and all of the following have occurred:

1. The CRS has notified the project owner and the BLM Palm Springs Field Office archaeologist, and the CPM has been notified within 24 hours of the discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning, including a description of the discovery (or changes in character or attributes), the action taken (i.e., work stoppage or redirection), a recommendation of CRHR eligibility, and recommendations for data recovery from any cultural resources discoveries, whether or not a determination of CRHR eligibility has been made.

2. If the discovery would be of interest to Native Americans, the CRS has notified all Native American groups that expressed a desire to be notified in the event of such a discovery.

3. The CRS has completed field notes, measurements, and photography for a DPR 523 "Primary" form. Unless the find can be treated prescriptively, as specified in the CRMMP, the "Description" entry of the DPR 523 "Primary" form shall include a recommendation on the CRHR eligibility of the discovery. The project owner shall submit completed forms to the CPM.

4. The CRS, the project owner, and the CPM have conferred, and the CPM has concurred with the recommended eligibility of the discovery and approved the CRS's proposed data recovery plan, if any, including the curation of the artifacts, or other appropriate mitigation; and any necessary data recovery and mitigation have been completed.

Verification:

1. At least 30 days prior to the start of ground disturbance, the project owner shall provide the CPM and CRS with a letter confirming that the CRS, alternate CRS, PSSA, PPA, PHA, PG, and CRMs have the authority to halt ground disturbance in the vicinity of a cultural resources discovery, and that the project owner shall ensure that the CRS notifies the CPM within 24 hours of a discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning.

2. Within 48 hours of the discovery of a resource of interest to Native Americans, the project owner shall ensure that the CRS notifies all Native American groups that expressed a desire to be notified in the event of such a discovery.

3. Unless the discovery can be treated prescriptively, as specified in the CRMMP, completed DPR 523 forms for resources newly discovered during ground disturbance shall be submitted to the CPM for review and approval no later than 24 hours following the notification of the CPM, or 48 hours following the completion of data recordation/recovery, whichever the CRS decides is more appropriate for the subject cultural resource.

CUL-10 DATA RECOVERY FOR SMALL SITES

Prior to the start of ground disturbance, within 30 meters of the site boundary of sites CA-Riv-9084, CA-Riv-9209, CA-Riv-9215, CA-Riv-9216, CA-Riv-9220, CA-Riv-9223, CA-Riv-9227, CA-Riv-9249, and CA-Riv-9255, the project owner shall ensure that the CRMMP includes a data recovery plan for these sites. The plan shall specify in detail the location recordation equipment and methods used and describe any post-processing of the data. The project owner shall then ensure that the CRS, the PSSA, the PPA, and/or archaeological team members implement the plan, if allowed by the BLM, which shall include, but is not limited to the following tasks:

1. Use location recordation equipment that has the latest technology with sub-meter accuracy (such as UTM 11 North or California Teale Albers) to add to the original site maps the following features: seasonal drainages, site boundaries, location of each individual artifact, and the boundaries around individual artifact concentrations.;

2. Collects all artifacts after their locations are marked, and submits them for laboratory analysis;

3. Request the PG to identify the specific landform for each site and its relationship to specific ancient lakeshores of Ford Dry Lake. If a lakeshore

is present within 100 meters of the site boundary, it shall be included on the site map;

4. Excavate one 1-meter-by-1-meter unit in 10-centimeter levels until the unit reaches the top of the Qoaf alluvium, placing these units in the part of the site with the highest artifact density

5. Place one 1-meter-by-1-meter excavation unit, as described above, in the center of each concentration if multiple artifact concentrations have been identified;

6. Test the horizontal limits of the site by placing test units down to the upper boundary of the Qoaf alluvium with a shovel or hand auger, or other similar technique, at four spots equally spread around the exterior edge of each site;

7. Continue exploring the extent of the site using methods described in **CUL-11**, if features or other buried deposits are identified. Plans for this contingency shall be described in detail in the CRMMP. If no buried deposits are found, data recovery is complete;

8. Present the results of the **CUL-10** data recovery in a letter report by the PPA or CRS, which shall serve as a preliminary report. Letter reports may address one site, or multiple sites depending on the needs of the CRS. The letter report shall be a concise document the provides description of the schedule and methods used in the field effort, a preliminary tally of the numbers and types of features and deposits that were found, a discussion of the potential range of error for that tally, and a map showing the location of excavation units including topographic contours and the site landforms;

9. Update the existing Department of Parks and Recreation (DPR) 523 site form for these sites, including new data on seasonal drainages, site boundaries, location of each individual artifact, the boundaries around individual artifact concentrations, and the landform; and

10. Present the final results of data recovery at these nine prehistoric sites in the CRR, as described in **CUL-6**.

Verification:

1. At least 90 days prior to ground disturbance, the project owner shall notify the CPM that data recovery for small sites has ensued.

2. Within one week of the completion of data recovery at a site, the project owner shall verify this by submitting a letter report written by the PPA or CRS for review and approval of the CPM. When the CPM approves the letter report, ground disturbance may begin at these site locations.

CUL-11 DATA RECOVERY FOR LARGE SITES WITH MECHANICAL EXCAVATION

Prior to the start of ground disturbance, the project owner shall ensure that the CRMMP includes a plan to recover data from those parts of sites CA-Riv-0260, CA-Riv-0663, and CA-Riv-9072 that the project will directly impact. The plan shall specify in detail the location recordation equipment and methods used and describe any post-processing of the data. The project owner shall then ensure that the plan is implemented, if allowed by the BLM. The sub-surface data recovery plan at these three sites shall, at a minimum, include the following:

1. The research questions to be addressed by the data recovery at these three PTNCL contributors, based on the context written by the PTNCL PI-Prehistoric Archaeologist, PTNCL Ethnographer, and PTNCL Ethnohistorian, as described in **CUL-1**;

2. The flagging of the entire boundary of each site as required in **CUL-13**;

3. The accurate and conspicuous marking with lath and flagging of that portion of each site that is inside plant site boundaries and subject to destruction; this area shall constitute the study area for each site;

4. The detailed examination of the surface within each site study area;

5. The creation of a digital map using location recordation equipment hing the latest technology with sub-meter accuracy (such as UTM 11 North or California Teale Albers); the map shall include at a minimum: the site boundary, local landforms, features, and the boundaries around artifact concentrations.; point proveniencing on the map of all artifacts shall be used unless, in cases of high artifact density, alternative methods can be negotiated with the CPM. After the location of each artifact is marked, it shall be collected for analysis; FAR (fire-affected rock—rock that shows evidence of having been in prolonged contact with fire) that is not also groundstone, may be counted and discarded;

6. The employment of an experienced archaeologist/backhoe operator team (as described in **CUL-3**) to conduct the mechanical excavation and subsurface sampling;

7. Field direction by the PSSA, with qualifications described in **CUL-3**, of any data recovery at these three sites or any other GSEP sites that require mechanical excavation;

8. The identification of any buried deposits, to be accomplished by placing a series of backhoe trenches in systematic intervals across each site. A trenching plan, developed by the PSSA and included in the **CUL-11** data recovery plan in the CRMMP, shall specify the location of the trenches and the strategy behind their placement at each site; at a minimum the trenching plan shall:

a. Result in a 10 percent sample of the portion of the site expected to be destroyed, trench spacing between 10-m to 50-m, and a trench orientation from north-south, unless site specific conditions suggest better results using a different arrangement;

b. Use backhoe trenches two feet wide and generally dug to depths no greater than 5 feet to conform to OSHA standards;

c. Use stepped trenches or hydraulic shoring if a depth greater than 5 feet is required to investigate archaeological features, to comply with OSHA regulations;

d. Require trench walls to be scraped with hand tools to provide a clear exposure of subsurface cultural remains;

e. Require archaeological features identified in trench walls to be marked and assigned a number; and

f. Require the completion of a trench record form for each trench that includes its essential characteristics (trench number, length, width, and depth), the locations and types of archaeological features, the stratigraphy and characteristics of exposed sediments, and locations of disturbances such as tree roots or animal burrows.

9. The requirements that:

a. All identified features shall be documented through standardized forms, scaled profile drawings, plan view maps, and photographs;

b. Between 50 and 100 percent of the features identified shall be fully or partially excavated, depending on their state of preservation and the presence or absence chronologically relevant materials;

c. The proportion of excavated features shall be negotiated between the owner and the CPM on a site-by-site basis, depending on the nature of the features identified, their rarity, and their information potential; and

d. Buried features shall be excavated by hand or by mechanical “stripping” with a backhoe bucket to remove sterile overburden until 20 centimeters above the limits of the feature, as identified in the trench wall, then excavating the remainder of the feature by hand, using the standard archaeological methods as outlined by the California SHPO; and

e. Samples such as flotation, pollen, and charcoal shall be methodically collected from appropriate contexts, and artifacts such as lithics, ceramics, groundstone, and shell shall be subject to the professionally appropriate laboratory analyses.

10. The determination of the age and function of each site, if possible;

11. A letter report, which shall serve as a preliminary report, written by the CRS, PSSA, and/or trench specialist submitted to the CPM that details what was found at each site, as follows:

    a. Letter reports may address one site, or multiple sites depending on the needs of the CRS; and

    b. The letter report shall be a concise document the provides a description of the schedule and methods used in the field effort, a preliminary tally of the numbers and types of features and deposits that were found, a discussion of the potential range of error for that tally, and a map showing the location of excavation units, including topographic contours and the site landforms.

12. The updating of the existing DPR 523 site forms for these sites, including new data on features, artifact analyses and the overall results of the data recovery and the landform;

13. The definitive determination as to whether the three sites evaluated are contributing elements to the PTNCL, made by the PTNCL PI using the data collected from the field work at these sites;

14. The completion of a final, comprehensive report, after all recovered data are analyzed, written by the CRS and/or the trench specialist, or under their direction;

15. The inclusion of the final version of this report in the CRR (**CUL-6**).

16. The inclusion of relevant portions of the information gathered at the three sites in the possible NRHP nomination for the PTNCL (**CUL-1**);

17. A paper, incorporating the final results of the surface collection at these sites (**CUL-12**) and the data from other PTNCL sites and placing the GSEP sites in the larger context of the region, to be submitted to a peer-reviewed archaeological journal;

18. Evaluation of the paper by the PI-Prehistoric Archaeologist, the PTNCL Ethnographer, and the CPM prior to its submission for publication; and

19. The pursuit by the CRS of the publication of this paper to its successful completion.

Verification:

1. At least 90 days prior to ground disturbance, the project owner shall notify the CPM that data recovery for large sites has ensued.

2. Within one week of completing data recovery at a site, the project owner shall submit to the CPM for review and approval a letter report written by the CRS, evidencing that the field portion of data recovery at each site has been completed. When the CPM approves the letter report, ground disturbance may begin at the site location(s) that are the subject of the letter report.

3. Within 90 days of the submission of the draft CCR to the CPM, the project owner shall submit to the CPM for review and approval the draft of the required research paper, as reviewed and approved by the PTNCL PI-Prehistoric Archaeologist and the PTNCL Ethnographer.

4. Within 90 days following its publication in a peer-reviewed journal, the project owner shall submit for CPM review and approval a copy of the published paper.

CUL-12 SURFACE COLLECTION WITH SAMPLING FOR LARGE SITES

Prior to the start of ground disturbance, the project owner shall ensure that the CRMMP includes a plan to recover data from those parts of sites CA-Riv-0260, CA-Riv-0663, and CA-Riv-9072 that the project will both directly and indirectly impact. The plan shall specify in detail the location recordation equipment and methods used and describe any post-processing of the data. The project owner shall then ensure that the plan is implemented, if allowed by the BLM. The surface data collection plan shall include, but is not limited to the following:

1. Marking the boundary for each site conspicuously as required in **CUL-13**;

2. Completing a surface collection in the part of each site that is inside the plant site boundaries, and thus subject to destruction, prior to ground disturbance in the area; all diagnostic artifacts and features shall be mapped using the latest technology with sub-meter accuracy, such as UTM 11 North or California Teale Albers. The artifacts will be collected and curated; if datable materials are present on the ground surface and in clear association with a feature, a sample of these materials shall be collected;

3. Completing additional surface collection transects or units, judgmentally placed in areas of highest artifact density, in total representing 10 percent of the overall site area outside of the plant site boundaries; the artifacts in these transects shall be mapped and then collected;

4. Analyzing the collected artifacts and the incorporate the results into the appropriate section of the CRR for each site;

5. Writing and submitting to the CPM a letter report by the CRS and PSSA, which shall serve as a preliminary report, that details what was found at each site Letter reports may address one site, or multiple sites depending on the needs of the CRS; the results of the surface collection may be incorporated into the results of the data recovery, required in **CUL-11**, at the same site, depending on the needs of the CRS;

6. Ensuring that the letter report is a concise document that provides description of the schedule and methods used in the field effort, a preliminary tally of the numbers and types of features and deposits that were found, a discussion of the potential range of error for that tally, and a

map showing the location of collection units including topographic contours and the site landforms; and

7. Including the final results of the surface collection at these sites into the CRR required under **CUL-6**.

Verification:

1. At least 90 days prior to ground disturbance, the project owner shall notify the CPM that surface collection on sites CA-Riv-0260, CA-Riv-0663, and CA-Riv-9072 has ensued.

2. Within one week of completing data recovery at a site, the project owner shall submit to the CPM for review and approval a letter report written by the CRS, evidencing that the surface collection portion of data recovery at each site has been completed.

CUL-13 FLAG AND AVOID

Prior to the start of ground-disturbing activities within 30 meters of sites CA-Riv-0260, CA-Riv-0663, and CA-Riv-9072, the project owner shall reduce or avoid impacts to these sites, if allowed by the BLM, by:

1. Ensuring that a CRS, alternate CRS, PSSA, PPA, or CRM re-establish the boundary of each site, add a 10-meter-wide buffer around the periphery of each site boundary, and flag the resulting space in a conspicuous manner;

2. Ensuring that a CRM enforces avoidance of the flagged areas during GSEP construction;

3. Removing the boundary around each site after the completion of all construction activities, including landscaping;

Verification:

1. At least 15 days prior to the start of construction, the project owner shall submit for CPM review and approval a letter, with photographs and maps, evidencing the completion of the required boundary marking.

2. Within 90 days of the completion of plant construction, the project owner shall submit for CPM review and approval a letter, with photographs and maps, evidencing the removal of the boundary marking.

CUL-14 PALEN-MCCOY WILDERNESS BOUNDARY FENCE CONSTRUCTION

Prior to the start of ground disturbance, the project owner shall avoid or minimize impacts to PTNCL contributors located in the Palen-McCoy Wilderness, if allowed by the BLM, through the following measures:

1. Install permanent fencing, which meets Bureau of Land Management (BLM) standards. Unless otherwise specified by BLM, the fence shall be a "Typical Barbed Wire Fence (4-Wire)," as described in the BLM National Science and Technology Center Engineering Specifications standard fence drawings. This fence shall be installed along the southern border of the Palen-McCoy Wilderness, extending from the northeast corner of the

GSEP facility security fence to the southeasternmost extent of the Wilderness;
2. Install gates along this fence, the number and technical specifications of which shall be determined by BLM; and
3. Maintain the fence for the life of the project.

This condition shall be void if the BLM does not give the project owner permission to construct and maintain the fence.

Verification:

1. At least 30 days prior to any ground disturbance, the project owner shall submit for CPM review and approval a letter, with photographs and maps, evidencing the completion of the Palen-McCoy Wilderness boundary fence.

2. Annually, in the Annual Report, the project owner shall report on Palen-McCoy Wilderness boundary fence maintenance activities.

CUL-15 GEOGLYPH FENCE CONSTRUCTION

Prior to the start of ground disturbance, the project owner shall avoid or minimize impacts to PTNCL contributors CA-Riv-0661 and CA-Riv-0662, if allowed by the BLM, through the following measures:

1. Have the CRS, alternate CRS, PPA, or CRM re-establish the geoglyph boundaries;

2. Install permanent fencing, meeting BLM's standards around each site, 10 meters beyond the formal site boundary. Unless otherwise specified by BLM, the fence shall be a "Typical Barbed Wire Fence (4-Wire)," as described in the BLM National Science and Technology Center Engineering Specifications standard fence drawings.

3. Provide pedestrian access to each site, as determined by BLM; and

4. Maintain the fence for the life of the project.

5. This condition shall be void if the BLM does not give the project owner permission to construct and maintain the fence.

Verification:

1. At least 30 days prior to any ground disturbance, the project owner shall submit for CPM review and approval a letter, with photograph and maps, evidencing the completion of the geoglyph site fences.

2. Annually, in the Annual Report, the project owner shall report on the geoplyph site fences maintenance activities.

CUL-16 PTNCL CULTURAL LANDSCAPE MONITORING PROGRAM

Prior to the start of construction, and continuing until the end of construction, to minimize the indirect impact of potential increased vandalism to the PTNCL

and 248 of its probable contributors, the project owner shall ensure that the CRMMP includes a monitoring plan, written by the CRS, the PPA, and the PE, with the assistance of the PTNCL PI-Prehistoric Archaeologist and the PTNCL Ethnographer. The plan shall specify in detail the location recordation equipment and methods used and describe any post-processing of the data. The project owner shall ensure that the monitoring plan is implemented, if allowed by the BLM. The monitoring plan shall include, at a minimum, the following:

1. Consultation by the PE with local Native American groups to determine what indirect impacts they identify for the PTNCL, and what mitigation they recommend; these consultations shall include personal interviews and visits by Native Americans to PTNCL sites, if allowed by the BLM;

2. Coordination of this monitoring program with any ongoing monitoring of other PTNCL contributors in the Southern California Desert region;

3. A study by a qualified CRM to assess the pre-construction condition of the 248 PTNCL archaeological sites recorded by McCarthy's survey in the 1990s, using photographs taken by the McCarthy team when originally recording these resources, all relevant maps, descriptions of the artifacts and features, and location recordation equipment using the latest technology with sub-meter accuracy (such as UTM 11 North or California Teale Albers) and containing site locations, if allowed by the BLM;

4. Visits to and inspection once a month, with the approval of the BLM, during construction by a CRM (possibly accompanied by a Native American monitor) of archaeological sites identified by McCarthy's survey in the 1990s, to check for evidence of vandalism. Monitors shall be provided with all necessary equipment including:

    a. A vehicle, horses for monitoring in the Wilderness, horse trailer, camping equipment, and supplies; and

    b. Location recordation equipment using the latest technology with sub-meter accuracy (such as UTM 11 North or California Teale Albers), containing site locations, the CPM-approved pre-construction condition study, all relevant maps, descriptions of the artifacts and features, and photographs taken by the McCarthy team when originally recording these resources;

5. Mapping and photography of all new vandalism with location recordation equipment using the latest technology with sub-meter accuracy (such as UTM 11 North or California Teale Albers) and a daily log of the site visits and inspections, including observations on vandalism;

6. More frequent monitoring visits in response to vandalism with the consultation and approval of the CPM;

7. Initiation of a data recovery phase, in the form of surface collection and artifact analysis, if vandalism is observed, at the discretion of the CRS, the

PTNCL PI-Prehistoric Archaeologist, and the PTNCL Ethnographer, with the consultation and approval of the CPM, and with the approval of the BLM; the research design in the CRMMP shall govern the treatment, retention/disposal, and curation of any archaeological materials collected;

8. Formal recordation on DPR 523 forms of any new sites identified during monitoring and recordation of their boundaries, using location recordation equipment using the latest technology with sub-meter accuracy (such as UTM 11 North or California Teale Albers);

9. Fulfillment of any additional mitigation measures recommended by Native Americans, if feasible and approved by the BLM;

10. Participation of a Native American monitor in PTNCL site visits, if requested by local Native American groups. Contact lists of interested Native Americans and guidelines for monitoring shall be obtained from the Native American Heritage Commission. Preference in selecting a monitor shall be given to Native Americans with traditional ties to the area that shall be monitored. If efforts to obtain the services of a qualified Native American monitor are unsuccessful, the project owner shall immediately inform the CPM. Staff shall either identify potential monitors or shall allow monitoring to proceed without a Native American monitor; and

11. Continuation of the monitoring of the PTNCL sites on an annual basis after construction is completed, for the life of the project.

CRMs shall keep a daily log of PTNCL site monitoring and any other cultural resources activities. Copies of the daily monitoring logs shall be provided by the CRS to the CPM, if requested by the CPM. From these logs, the CRS shall compile a monthly monitoring summary report to be included in the MCR. If there are no monitoring activities, the summary report shall specify why monitoring has been suspended.

In the event that the CRS believes that the current level of PTNCL monitoring is not appropriate, a letter or e-mail detailing the justification for changing the level of monitoring shall be provided to the CPM for review and approval prior to any change in the level of monitoring.

The project owner shall provide to the Chairpersons of the Native American tribes or groups who requested such information the records and reports of any new resources identified during PTNCL site monitoring. In all cases where the new information entails site locations on BLM-managed lands, that information shall not be provided to anyone without the permission of BLM.

Verification:

1. At least 60 days prior to the start of construction, the project owner shall notify the CPM that the Native American consultation by the PE has been initiated.

2. At least 30 days prior to the start of construction, the project owner shall provide to the CPM and to the BLM Palm Springs Field Office archaeologist the results of the PE's consultation with local Native American groups concerning the impacts they identify for the PTNCL and what mitigation they recommend for these impacts.

3. At least 30 days prior to construction, the project owner shall submit for CPM review and approval a letter report, with photographs and maps, of the results of the condition study of PTNCL archaeological sites, documenting the conditions of these sites prior to the start of GSEP construction.

4. At least 30 days prior to construction, the project owner shall submit to the CPM a letter report outlining efforts to identify and coordinate with any other ongoing monitoring activities for PTNCL contributors in the Southern California Desert region.

5. At least 30 day prior to the start of construction, the project owner shall notify the CPM of the name of the Native American PTNCL monitor, if required.

6. No more than 15 days after the start of construction, the project owner shall notify the CPM that the monitoring visits and inspections have been initiated.

7. Daily, PTNCL CRMs shall keep a log of monitoring and other cultural resources activities. Copies of these daily monitoring logs shall be provided by the CRS to the CPM, if requested by the CPM.

8. Monthly, while monitoring is on-going, the project owner shall include in each MCR a copy of the monthly summary report of cultural resources-related monitoring prepared by the CRS and including information derived from the monitoring logs of the PTNCL CRMs.

9. Within 5 days of the PTNCL monitor reporting vandalism at the PTNCL archaeological sites, the CRS, after consultation with the PTNCL PI-Prehistoric Archaeologist and the PTNCL Ethnographer, and after CPM consultation and approval, shall initiate data recovery at the vandalized site or sites, in the form of surface collection and artifact analysis. The research design in the CRMMP shall govern the treatment, retention/disposal, and curation of any archaeological materials collected.

10. At least 24 hours prior to implementing a proposed change in PTNCL monitoring frequency, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS's justification for changing the monitoring frequency.

11. Within 30 days of the completion by the PTNCL monitor of DPR 523 forms for any new sites identified during monitoring, the CRS shall submit copies of the forms to the BLM Palm Springs Field Office archaeologist for review and comment.

12. No later than 60 days following the discovery of any new Native American cultural materials, the project owner shall submit to the CPM copies of the information

transmittal letters sent to the Chairpersons of the Native American tribes or groups who requested the information, if that transmittal was allowed by BLM.

13. Annually, in the Annual Report, the project owner shall report on the results of the annual monitoring of the PTNCL sites.

CUL-17 HISTORIC-PERIOD SITE MAPPING AND IN-FIELD ARTIFACT ANALYSIS

Prior to the start of ground disturbance, the project owner shall ensure that a data recovery plan for the 15 historic-period archaeological resources identified within the GSEP site footprint and linear corridor is included in the CRMMP, The project owner shall ensure that the plan is implemented. The plan must include, but is not limited to, the following:

1. The project owner as described in **CUL-5**. Research questions addressed by this field work shall be based upon the context written by the PI-Historian and the Historical Archaeologist of the DTCCL documentation and possible NRHP nomination program.

2. The project owner shall hire a PHA with the qualifications described in **CUL-3** to supervise the field work.

3. The project owner shall ensure that, prior to beginning the field work, the PHA and all field crew members are trained by the DTCCL Historical Archaeologist in the identification, analysis and interpretation of the artifacts, environmental modifications, and trash disposal patterns associated with the early phases of WWII land-based U.S. army activities, as researched and detailed by the DTCCL PI-Historian and the DTCCL Historical Archaeologist.

4. The project owner shall ensure that, prior to beginning the field work, the field crew members are also trained in the consistent and accurate identification of the full range of late nineteenth and early-to-mid-twentieth-century can, bottle, and ceramic diagnostic traits.

5. The project owner shall ensure that all 15 historic-period archaeological sites shall be revisited by the field crew. Using location recordation equipment that has the latest technology with sub-meter accuracy (such as UTM 11 North or California Teale Albers), the original site map shall be updated to include at minimum: landform features such as small drainages, the location of each artifact, and the limits of any artifact concentrations or other features.

6. The project owner shall ensure that an in-field analysis of all artifacts shall be completed. The dimensions of each artifact and feature shall be recorded. Types of seams and closures for each bottle and all cans shall be documented. Photographs shall be taken of any text or designs. Unusual or unidentifiable artifacts may be collected for further analysis, but otherwise artifacts shall not be collected.

7. The project owner shall ensure that each site shall be examined with a metal detector to determine if buried deposits are present. If such deposits are located, the size and shape of each feature shall be established and a sample of the materials each feature contains shall be excavated by a qualified historical archaeologist. Details for this contingency shall be outlined in the CRMMP.

8. The project owner shall ensure that the details of what is found shall be presented in a letter report from the CRS or PHA ,which shall serve as a preliminary report, that details what was found at each site, as follows:.
   a. Letter reports may address one site, or multiple sites depending on the needs of the CRS; and
   b. The letter report shall be a concise document the provides a description of the schedule and methods used in the field effort, a preliminary tally of the numbers and types of features and deposits that were found, a discussion of the potential range of error for that tally, and a map showing the location of collection and/or excavation units, including topographic contours and the site landforms.

9. The project owner shall ensure that the data collected from the field work shall be provided to the DTCCL Historical Archaeologist to assist in the determination of which, if any, of the 15 historic-period sites are contributing elements to the DTCCL.

10. The project owner shall ensure that the PHA analyzes all recovered data and writes or supervisors the writing of a comprehensive final report. This report shall be included in the CRR (**CUL-6**). Relevant portions of the information gathered shall be included in the possible NRHP nomination for the DTCCL (funded by **CUL-2**).

11. The project owner shall ensure that the results of the field work shall be prepared in a paper, incorporating the data from other DTCCL sites and placing the GSEP sites in the larger context of the region and of WWII, and submitted to a peer-reviewed archaeological journal.

12. The paper shall be evaluated by the DTCCL PI-Historian, the DTCCL Historical Archaeologist and the CPM prior to its submission for publication.

13. The CRS shall pursue the publication of this paper to its successful completion.

Verification:

1. At least 90 days prior to ground disturbance, the project owner shall notify the CPM that historic-period site mapping and in-field artifact analysis has ensued.

2. Within one week of completing data recovery at a site, the project owner shall submit to the CPM for review and approval a letter report written by the CRS, evidencing that the field portion of data recovery at each site has been completed. When the

CPM approves the letter report, ground disturbance may begin at the site location(s) that are the subject of the letter report.

3. Within 90 days of the submission of the draft CCR to the CPM, the project owner shall submit to the CPM for review and approval the draft of the required research paper, as reviewed and approved by the DTCCL PI-Historian and the DTCCL Historical Archaeologist.

4. Within 90 days following its publication in a peer-reviewed journal, the project owner shall submit for CPM review and approval a copy of the published paper.

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C.3.12 GLOSSARY

CULTURAL RESOURCES LIST AND GLOSSARY

GENESIS Solar Energy Project

ACC	Air-Cooled Condenser
Act	Warren-Alquist Act of 1974
AD	After the Birth of Christ
ACEC	BLM Area of Critical Environmental Concern
AFC	Application for Certification
APE	Area of Potential Effects, equivalent to PAA
BEPTL	Blythe Energy Project Transmission Line
BC	Before the Birth of Christ
BLM	Bureau of Land Management
cal	Radiocarbon (C14) dates that have been calibrated to compensate for fluctuating levels of atmospheric C14. Calibrated C14 dates correspond to calendar years. Calibrated dates are expressed as cal AD or cal BC, where "cal" indicates "calendar years" or "calibrated years."
CARE	Californians for Renewable Energy
CURE	California Unions for Reliable Energy
CA-Riv-#	Archaeological site numbers assigned by a CHRIS Information Center
CCS	Cryptocrystalline Silicate (rocks such as flint, chert, chalcedony, or jasper that contain a high percentage of silica [SiO2], the primary compound that composes quartz.)
CDCA	California Desert Conservation Area, a land use planning unit defined by the BLM in 1980
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Information System

Conditions	California Energy Commission Conditions of Certification
CRHR	California Register of Historical Resources
Criterion/a	The criteria for listing in the CRHR (1-4) or NRHP (A-D), if met a resource can be considered historically significant
CRM	Cultural Resources Monitor
DEIS	Draft Environmental Impact Statement (NEPA)
DPR 523	Department of Parks and Recreation cultural resources inventory form
DTC/C-AMA	World War II Desert Training Center/California-Arizona Maneuver Area
DTCCL	Desert Training Center/California-Arizona Maneuver Area Cultural Landscape
EIC	Eastern Information System, CHRIS, Department of Anthropology, University of California, Riverside
Eligible	A cultural resource need only be determined eligible for listing on the CRHR or the NRHP, using the criteria listed above, in order to be determined culturally significant
FAR	Fire-affected rock, rock that shows evidence of having been in prolonged contact with fire
FEIS	Final Environmental Impact Statement (NEPA)
Gen-Tie	Generation-tie, an intersection of two power transmission lines
GPS	Global Positioning System, a U.S. space-based global navigation satellite system
GSEP	proposed project, Genesis Solar Energy Project
Historical resource	A cultural resource that is historically significant and eligible for listing in the CRHR
Historic property	Federal language for all cultural resources that are historically significant and eligible for listing on the NRHP
I-10	Interstate 10

Integrity	The ability of a cultural resource to communicate its significance
kV	Kilovolts, 1000 volts
LORS	laws, ordinances, regulations, and standards
MLD	Most Likely Descendent, a term used to refer to who must be contacted when a an unmarked human skeleton is found
MOA	Memorandum of Agreement
MW	Megawatts
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission of California
NECO	Northern and Eastern Colorado Desert Coordinated Management, a multi-agency planning effort for the Sonoran Desert in California, amends the CDCA
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
ORBA	Off-Road Business Association
PA	Programmatic Agreement
PAA/Project Area of Analysis	The project site (see below) plus what additional areas staff defines for each project that are necessary for the analysis of the cultural resources that the project may impact.
Potentially eligible	A cultural resource that may be determined eligible for listing on the CRHR or NRHP after further archaeological study
Project Site	The bounded area(s) identified by the applicant as the area(s) within which they propose to build the project.
PTNCL	Prehistoric Trails Network Cultural Landscape
RSA	Revised Staff Assessment (Energy Commission, CEQA)

Section 106	Section 106 of the National Historic Preservation Act of 1966 requires Federal agencies to take into account the effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. The historic preservation review process is outlined in the regulations entitled "Protection of Historic Properties" (36 CFR Part 800).
SHPO	State Historic Preservation Officer
Significant	In order to be eligible for listing on the NRHP a cultural resource must be evaluated using the four criteria to determine if the resource is significant
SLF	Sacred Lands File at the NAHC
Staff	Energy Commission cultural resources technical staff
SA	Staff Assessment (Energy Commission, CEQA)
SSA/FEIS	Staff Supplemental Assessment/Final Environmental Impact Statement
TCP	Traditional Cultural Property, as described in the regulations for Section 106 of the NHPA, can be a site, structure, district, landscape, or natural feature that has traditional cultural significance, that is, significance based in the role the property plays in a community’s historically rooted beliefs, customs, and practices.

C.8 - SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

Testimony of Scott Debauche

C.8.1 SUMMARY OF CONCLUSIONS

Energy Commission staff (hereafter referred to as "staff") have reviewed the Genesis Solar Energy Project (GSEP or proposed project) in accordance with the requirements of the California Environmental Quality Act (CEQA). With respect to CEQA, staff concludes that the GSEP would not under CEQA cause a significant adverse direct or indirect impact or contribute to a cumulative socioeconomic impact on the area's housing, schools, parks and recreation, police, emergency medical services, or hospitals, because the project's construction and operation workforce currently resides in the regional or local labor market area. Staff also concludes that the project would not require the construction of new or altered public facilities.

The construction and operation of the proposed GSEP would not result in any disproportionate impacts to low-income or minority populations. Gross public benefits from the proposed project include capital costs, construction and operation payroll, and sales taxes from construction and operational spending.

Please refer to the **Land Use, Recreation, and Wilderness** section of this document for further analysis of recreation impacts and the **Worker Safety and Fire Protection** section of this report for analysis of local fire protection services.

C.8.2 INTRODUCTION

Staff's socioeconomics impact analysis evaluates project-induced changes on existing population and employment patterns, community services. In addition, this section provides demographic information related to environmental justice. A discussion of the estimated beneficial economic impacts of the construction and operation of the proposed GSEP and other related economic impacts are provided.

C.8.3 METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

With respect to CEQA, socioeconomic impacts are limited to those that could be considered direct effects on the environment, such as changes to population and housing, and that are separate from strictly economic impacts, such as a loss of revenue.

A project may have a significant effect on socioeconomic factors if that project would potentially:

- Induce substantial population growth in an area, either directly or indirectly;
- Displace substantial numbers of people and/or existing housing, necessitating the construction of replacement housing elsewhere; or

- Adversely impact acceptable levels of service for fire and police protection, schools, parks and recreation, and other publicly funded facilities and services.

In addition to the above, this GSEP socioeconomics analysis identifies beneficial fiscal and economic effects, including impacts on local finances from property and sales taxes as well as the creation of employment, employment revenue, and the purchases of goods and services during both GSEP construction and operation.

To satisfy the requirements of Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," this section identifies any disproportionate minority and low-income populations within the GSEP study area. Any disproportionate significant impacts to minority and low-income populations are discussed within each environmental issue area section of this document.

Criteria for subject areas such as utilities, fire protection, water use, and wastewater disposal are analyzed in the **Soil and Water Resources**, **Reliability**, **Worker Safety and Fire Protection**, and **Waste Management** sections of this Revised Staff Assessment. Impacts on population, housing, parks and recreation, schools, medical services, law enforcement, and cumulative impacts are based on a combination of subjective judgments and the analysis of data and trends from local and state agencies that track and monitor these issues. Typically, long-term employment of people from regions outside the study area could potentially result in significant adverse socioeconomic impacts. There are also potential impacts to a region based on short-term (i.e. construction) impacts that must be reviewed and addressed accordingly.

C.8.4 PROPOSED PROJECT

C.8.4.1 SETTING AND EXISTING CONDITIONS

Laws, Ordinances, Regulations, and Standards

The following table contains a table listing of those socioeconomic laws, ordinances, regulations, and standards (LORS) applicable to the Genesis Solar Energy Project under Federal, State and Local jurisdiction.

SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description
State	
California Education Code, Section 17620	The governing board of any school district is authorized to levy a fee, charge, dedication, or other requirement for the purpose of funding the construction or reconstruction of school facilities.
California Government Code, Sections 65996-65997	Except for a fee, charge, dedication, or other requirement authorized under Section 17620 of the Education Code, state and local public agencies may not impose fees, charges, or other financial requirements to offset the cost for school facilities.

REGIONAL STUDY AREA

The proposed project includes the construction and operation of a solar generating facility located in the Southern California inland desert on federal land managed by the BLM, approximately 25 miles west of the City of Blythe and approximately 30 miles west of the California-Arizona border in unincorporated eastern Riverside County. The community of Desert Center is located approximately 27 miles west of the proposed GSEP site. the findings of an Electric Power Research Institute report titled Socioeconomic Impacts of Power Plants, construction workers will commute as much as two hours to construction sites from their homes, rather than relocate (GSEP 2009a, p 5.8-14). Therefore, for purposes of this analysis, staff defines the socioeconomics regional study area is Riverside County, CA; San Bernardino County, CA; and La Paz County, AZ.

Current and forecasted population trends, as well as current housing trends for the regional study area are summarized in **SOCIOECONOMICS AND ENVIRONMENAL JUSTICE Table 2**. As shown in **Table 2.** From 2008 through 2030, the populations of Riverside and San Bernardino Counties are forecasted to comprise the majority of the total GSEP study area population, with Riverside County expected to experience the highest total population increase.

Also shown in **Table 2**, the regional study area contains the number of housing units, with San Bernardino and Riverside Counties contributing the largest numbers within the GSEP regional study area, at 612,801 units and 773,402 units, respectively. Among all communities within study area, La Paz County has the highest vacancy rate at 42.7%.

SOCIOECONOMICS AND ENVIRONMENAL JUSTICE Table 2
Population and Housing Profile of the Regional Study Area

Population				
Area	Year			
	2008 Population	2010 Projected Population	2020 Projected Population	2030 Projected Population
Riverside County, CA	2,078,601	2,239,053	2,904,848	3,507,498
San Bernardino County, CA	2,055,766	2,177,596	2,582,777	2,957,744
La Paz County, AZ	21,544	22,632	25,487	28,074
Housing				
Area	**2008 Total Housing Units**		**2008 Vacancy Rate Percentage (%)**	
Riverside County, CA	773,402		13.2	
San Bernardino County, CA	612,801		11.6	
La Paz County, AZ	15,577[1]		42.7[1]	

Notes: [1] Data from 2007.
Source: GSEP 2009a, Tables 5.11-4 and 5.11-5.

Local Study Area

As required by the Bureau of Land Management (BLM) Land Use Planning Handbook, Appendix D requirements (BLM 2009), a project analysis of this type needs to consider existing socioeconomic conditions and impacts on several geographic scales. An analysis at a local level presents a challenge because the proposed project is in a sparsely populated area, with the largest urban center being the city of Riverside located approximately 100 miles west of the site.

Based on BLM requirements, a reasonable study area for localized socioeconomic impacts would include the two nearest communities: the city of Blythe, CA (approximately 25 miles east of the GSEP site); and the city of Ehrenburg, AZ (approximately 30 miles east of the GSEP site). The most recently published population and housing data for these communities is presented below in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 3.**

SOCIOECONOMICS AND ENVIRONMENAL JUSTICE Table 3
Population and Housing Profile of the Local Study Area

Area	Year		
	2008 Population	2008 Total Housing Units	2008 Vacancy Rate Percentage (%)
Blythe, CA	13,541	5,444	16.1
Ehrenburg, AZ	1,409	824[1]	34.9[1]

Notes: [1] Data from 2000.
Source: GSEP 2009a, Tables 5.11-4 and 5.11-5

Based on staff research, the economic structure of the local study area communities that may be affected by the management of BLM-administered lands includes the rural, suburban communities of Blythe and Ehrenburg, which are closely tied to the Interstate

10 travel route between Los Angeles, CA and Phoenix, AZ. The primary economic base for both these communities includes tourism, mining, and infrastructure-related commerce.

Environmental Justice/Demographic Screening

Executive Order 12898, "Federal Actions to address environmental justice in Minority Populations and Low-Income Populations," focuses federal attention on the environment and human health conditions of minority communities and calls on agencies to achieve environmental justice as part of this mission. The order requires the US Environmental Protection Agency (EPA) and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.

Civil Rights Act of 1964, Public Law 88-352, 78 Stat.241 (Codified as amended in scattered sections of 42 U.S.C.) Title VI of the Civil Rights Act prohibits discrimination on the basis of race, color, or national programs in all programs or activities receiving federal financial assistance.

California law defines environmental justice as "the fair treatment of people of all races, cultures and income with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies" (Government Code Section 65040.12 and Public Resources Code Section 72000).

All Departments, Boards, Commissions, Conservancies and Special Programs of the Resources Agency must consider environmental justice in their decision-making process if their actions have an impact on the environment, environmental laws, or policies. Such actions that require environmental justice consideration may include:

- Adopting regulations;
- Enforcing environmental laws or regulations;
- Making discretionary decisions of taking actions that affect the environment;
- Providing funding for activities affecting the environment; and
- Interacting with the public on environmental issues.

In considering environmental justice in energy siting cases, staff uses a demographic screening analysis to determine whether a low-income and/or minority population exists within the potentially affected area of the proposed site. The potentially affected area consists of a six-mile radius of the site and is consistent with air quality modeling of the range of a project's air quality impacts. The demographic screening is based on information contained in two documents: *Environmental Justice: Guidance Under the National Environmental Policy Act* (Council on Environmental Quality, December, 1997) and *Guidance for Incorporating Environmental Justice Concerns in EPA's Compliance Analyses* (U.S. Environmental Protection Agency, April, 1998). The screening process relies on Year 2000 U.S. Census data to determine the presence of minority and below-poverty-level populations.

In addition to the demographic screening analysis, staff follows the steps recommended by the U.S. EPA's guidance documents which are outreach and involvement, and if warranted, a detailed examination of the distribution of impacts on segments of the population.

Staff has followed each of the above steps for the following 11 sections in the Revised Staff Assessment: Air Quality, Hazardous Materials, Land Use, Noise, Public Health, Socioeconomics, Soils and Water, Traffic and Transportation, Transmission Line Safety/Nuisance, Visual Resources, and Waste Management. Over the course of the analysis for each of the 11 areas, staff considered potential impacts and mitigation measures, significance, and whether there would be a significant impact on an environmental justice population.

Minority Population

According to *Environmental Justice: Guidance Under the National Environmental Policy Act*, minority individuals are defined as members of the following groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. A minority population, for the purposes of environmental justice, is identified when the minority population of the potentially affected area is greater than 50 percent or meaningfully greater than the percentage of the minority population in the general population or other appropriate unit of geographical analysis.

For the proposed GSEP, the total population within a six-mile radius of the proposed project is 8,308 persons (including prison populations of 3,913 at Chuckwalla and 3,945 at Ironwood state prisons), and the total minority population is 6,628 persons or 79.77 percent of the total population (see **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Figure 1**). As the demographic screening area as a whole exceeds 50.0 percent, as shown in **Figure 1**, staff in several technical areas identified in the Executive Summary has considered environmental justice in their environmental impact analyses.

Below-Poverty-Level Population

Staff has also identified the below-poverty-level population based on Year 2000 U.S. Census block data within a six-mile radius of the project site. Poverty status excludes institutionalized people, people in military quarters, people in college dormitories, and unrelated individuals under 15 years old. The below-poverty-level population within a six-mile radius of the proposed GSEP consists of no people or 0.0 percent of the total population in that area.

C.8.4.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Induce Substantial Population Growth

For the purpose of this analysis, staff defines "induce substantial population growth" as workers permanently moving into the project area because of project construction and operation, thereby encouraging construction of new homes or extension of roads or other infrastructure. To determine whether the project would induce population growth, staff analyzes the availability of the local workforce and the population within the region. Staff defines "local workforce" for the GSEP to be Riverside/San Bernardino/Ontario

Metropolitan Statistical Area (MSA), which includes both Riverside and San Bernardino Counties.[1] While the city of Ehrenberg within La Paz County, AZ is located within the proposed project local and regional study areas, respectively, and could contribute to the local workforce, detailed labor skill data is unavailable for this limited portion of the regional and local study area. As shown above in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 2**, due to the size of the La Paz County population, presenting local workforce data for the entire State of Arizona would not be representative of the available workforce within the county. However, it should be noted that construction workforce from within this county and local communities would contribute to the local workforce as identified in detail below.

Construction

It is anticipated that the construction period for the proposed GSEP would occur over a 37-month period of time. There would be an average of approximately 646 daily construction workers, with a peak daily workforce of 1,085, depending on the month and the work required. Laborers would consist of craftspeople and supervisory, support, and construction management personnel on site during construction. According to AFC section 5.8 (Socioeconomics), the peak construction labor force of 1,085 total daily construction workers would occur during the 23rd month of construction. This maximum employment number is used to analyze worst-case construction population and employment impacts. **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 4** shows Year 2006-2016 occupational employment projections for the Riverside/San Bernardino/Ontario MSA by construction labor skill as compared to the estimated number of total construction workers by craft needed during the peak month (month 23) as presented in the AFC (GSEP 2009a).

As shown in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 4**, there is more than adequate local availability of construction workforce within the Riverside/San Bernardino/Ontario MSA to serve the direct GSEP construction labor need.

[1] Metropolitan Statistical Areas are geographic entities defined by the U.S. Office of Management and Budget (OMB) for use by Federal and State statistical agencies in collecting, tabulating, and publishing socioeconomic statistics.

SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 4
Total Labor by Skill in Riverside/San Bernardino/Ontario MSA (2006 and 2016 Estimate) and GSEP Required Construction by Craft Peak Month

Trade	Total # of Workers for Project Construction by Craft – Peak Month	Riverside/San Bernardino/Ontario MSA 2006	Riverside/San Bernardino/Ontario MSA 2016
Insulators[1]	24	27,930	32,080
Operating Engineers	60	4,790	5,460
Laborer[1]	96	27,930	32,080
Teamsters[1]	38	27,930	32,080
Painters[1]	15	27,930	32,080
Carpenter	44	28,850	32,390
Solar Field Craft[1]	305	27,930	32,080
Pipe Fitter	200	4,630	5,330
Electrician	105	6,740	7,600
Cement Mason	4	4,110	4,690
Ironworker	70	19,460	20,800
Millwright[3]	22	2,630	2,960
Construction Staff[4]	92	10,990	12,380

Notes: [1] The "Construction Laborers" category was used, [2] the "Plumbers, Pipefitters, and Steamfitters" category was used, [3] the "Machinists" category was used, [4] the "Supervisors, Construction and Extraction Workers" category was used, [5] the "Helpers-Construction Trades" category was used.
Source: GSEP 2009a, Tables 5.8-12 and 5.8-15.

When considering potential socioeconomic impacts of workers required for GSEP construction, staff considered information provided in the AFC and current California Department of Finance data for the Riverside/San Bernardino/Ontario MSA as presented in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 4**. Staff also utilized the findings of an Electric Power Research Institute report titled Socioeconomic Impacts of Power Plants, construction workers will commute as much as two hours to construction sites from their homes, rather than relocate (GSEP 2009a, p 5.8-14). During preparation of this analysis, staff consultation with the Building and Trades Council of San Bernardino and Riverside Counties also indicated that construction workers within San Bernardino and Riverside counties regularly commute 2-hours each direction daily for work (CEC 2010b). Based on these data sources, staff concludes the majority of construction workers will come from within this regional study area.

While the AFC states that up to 70 percent of the workforce may seek local housing (GSEP 2009a, p 5.8-20), staff assumes that because data indicates the workforce would likely come from within the regional study area, it is speculative to quantify if and in what numbers construction workers may permanently relocate from the regional study area to the GSEP local area for a limited duration construction job with the GSEP. As discussed in the AFC, the applicant anticipates that very few, if any, of the workers employed during the construction phase of the GSEP would be expected to permanently relocate to the area as a result of this Project and would only temporarily relocate during the workweek (GSEP 2009a, p 5.8-20). To evaluate the potential for impacts, staff assumes that up to 15% of construction workers could seek local lodging in the GSEP local area during the workweek. It should be noted that this is an average

weekly assumption and would be a temporary and fluctuating demand on local lodging. Based on this assumption, it is possible that during the peak construction month (worst-case scenario) up to 163 workers could seek local lodging.

Hotel/Motel. Data compiled by Smith Travel Research for hotels, motels, and bed and breakfast inns (B&Bs) with 15 or more rooms identified 19 hotels with a total of 878 rooms within the local study area in 2008, which presents the most current available data (GSEP2009a, p. 5.8-5). These hotels were all located in Blythe, which is the only community with hotels or motels with 15 or more rooms within one hour's driving distance. The average annual occupancy rate for hotels in Riverside and San Bernardino Counties in 2007 was 70.8 percent (GSEP2009a, p. 5.8-6). Applying this ratio (70.8 percent) to the total number of hotel rooms identified within one hour of the GSEP site suggests that, on average, a total of 256 unoccupied rooms were available for rent in Blythe in 2008.

Fifty-seven hotels with a total of 8,285 rooms were identified in communities located from 1 to 1.5 hours drive from the GSEP site (GSEP2009a, p. 5.8-6). These communities include Indio, Palm Desert, Indian Wells, and Rancho Mirage. Applying the 2008 average occupancy ratio (70.8 percent) suggests that, on average, 2,419 unoccupied rooms are available for rent within 1 to 1.5 hours drive of the GSEP site. A total of 129 hotels with 7,541 rooms were identified in communities within 1.5 to 2 hours drive from the GSEP site (GSEP2009a, p. 5.8-6). These communities include Desert Hot Springs, Palm Springs, and Needles. Assuming an annual average occupancy rate of 70.8 percent, 2,202 unoccupied motel and hotel rooms were available for rent within 1.5 to 2 hours drive from the GSEP site. It should be noted that data was unavailable for local study area hotel/motel rooms located within Arizona, but is certainly available to workers.

Housing Vacancy. As shown in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 3**, based on current vacancy rates for the city of Blythe approximately 876 vacant housing units were available in 2008. Furthermore, as shown in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 3**, recent data indicates that approximately 1,594 local housing units were available within the cities of Ehrenburg and Quartzsite, AZ**.**

Campground/RV Parks. There are at least 10 Recreational Vehicle (RV) parks located in the vicinity of Blythe, with a combined total of about 800 spaces (GSEP2009a, p. 5.8-5). RV parks in Blythe tend to be located along the Colorado River and receive higher levels of use during the summer. Contact with a small sample of these RV parks suggests that while they have a large number of spaces, many of these are occupied by year-round residents or privately owned, and would not be available for use by construction workers (GSEP2009a, p. 5.8-6). Additional RV parks are located in Ehrenberg, Arizona, and Quartzsite, Arizona, approximately 4 miles and 20 miles east of Blythe, respectively. The town of Quartzsite web site states there are more than 70 RV parks in the vicinity of the community that are typically occupied between October and March, with visitors attracted to the gem, mineral, and swap meet shows which are popular tourist attractions in the area (GSEP2009a, p. 5.8-6).

BLM operates two primitive campgrounds in the general vicinity of the GSEP local study area: Wiley's Well Campground and Coon Hollow Campground, both located south of I-10 on Wiley's Well Road (GSEP2009a, p. 5.8-6). Except for "special areas" with specific camping regulations, vehicle camping is allowed anywhere on BLM-administered land within 300 feet of any posted Open Route. There are, however, no facilities in these locations and there is a 14-day limit for camping in any one location. After 14 days, campers wishing to stay in the area longer are required to move 25 miles from their original camp site (GSEP2009a, p. 5.8-6). Long-term camping is available by permit in Long-Term Visitor Areas (LTVAs) on BLM lands. There are two LTVAs located in the vicinity of Blythe and the Project site: Mule Mountain, which includes the Wiley's Well and Coon Hollow campgrounds, and Midland, located north of the city of Blythe. LTVAs are for recreation use only and workers would not be permitted to use these areas (GSEP2009a, p. 5.8-6).

Conclusion. Based on this available local study area data, staff concludes that any construction workers seeking RV and campground lodging would likely find limited availability in the local study area during the winter months. However, as discussed above, staff anticipates ample local housing would be available to any construction worker seeking local housing. Based on the availability of short-term housing in the local study area when compared to a maximum temporary peak demand of up to 163 workers potentially seeking local housing during the workweek, staff concludes that construction of the proposed project would not temporarily induce substantial growth or concentration of population in the local study area and construction of the GSEP would not encourage people to permanently relocate to the area due to temporary construction employment associated with the GSEP. It should be noted that the AFC indicates that in the event a shortage of spaces in RV parks in the Blythe area, as well as a potential shortage of hotel and motel rooms were to occur, the Applicant will work with the Blythe Area Chamber of Commerce and other appropriate officials to develop a housing plan, as needed (GSEP2009a, p. 5.8-21). Because the possibility of this occurrence is unknown at this time, the extent of this housing plan proposed by the Applicant is unknown to staff.

Operation

The proposed GSEP is expected to require a total of 40 to 50 permanent full-time employees (GSEP 2009a). **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 5** shows Year 2006-2016 occupational employment projections for the Riverside/San Bernardino/Ontario MSA (by operational labor skill as compared to the estimated number of total operational workers needed as presented in the AFC (GSEP 2009a).

SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 5
Total Labor by Skill in Riverside/San Bernardino/Ontario MSA (2006 and 2016 Estimate) and GSEP Required Operation

Trade	Total # of Workers for Project Operation	Riverside/San Bernardino/Ontario MSA 2006	Riverside/San Bernardino/Ontario MSA 2016
Plant and System Operators	--	2,030	2,380
Power Plant Operators	--	310	370
Total	*40-50*	*2,340*	*2,750*
Source: GSEP 2009a.			

As shown in **Table 5**, data for the Riverside/San Bernardino/Ontario MSA indicates that in the Year 2006, the "Plant and System Operators" and "Power Plant Operators" employment sector contained a total of 2,350 workers, with Year 2016 forecasts for these employment sectors to grow to a total of 2,750 employees. On p. 5.8-23 of the AFC, the applicant states that 50 percent of workers would come from within the regional study area workforce, resulting in a potential influx of approximately 25 workers in communities within the proposed GSEP regional and local study areas (GSEP 2009a). However, Staff's independent analysis (based on **Table 5**) shows that there is more than an adequate local workforce for project operation regardless of the specialized nature of the proposed project.

As stated on p. 5.8-23 of the AFC, the applicant states that 50% of workers would come from within the regional study area workforce, resulting in a potential influx of approximately 33 workers in communities within the proposed GSEP regional and local study areas (GSEP2009a). In the event these 33 permanent operational employees choose to live closer to the GSEP site, as shown in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 3** the most current published local study area vacancy rates for the cities of Blythe, CA; Ehrenberg, AZ; and Quartzsite, AZ are 16.1, 34.9, and 41.9 percent, respectively. These vacancy rates indicate ample local housing is available should these operational employees choose to relocate to the local study area. Additionally, research shows that power plant workers may commute as much as two hours each direction from their communities rather than relocate (GSEP 2009a, p 5.8-23). Therefore, staff believes some of these 33 workers that may relocate to the area may choose to live outside of the local study area or will choose to commute from their current residence within the regional study area. As shown in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 2**, the regional study area provides a high number of available housing opportunities. The addition of up to 33 workers to either the local or regional study area would not permanently induce substantial growth or concentration of population in excess of available housing or forecasted growth.

As shown in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 10**, staff agrees with the AFC data indicating that the GSEP will result in the generation of both indirect and induced employment. However, staff cannot speculate as to the type, potential hiring practice/requirements, and potential for employee relocation as a result of these indirect and induced jobs at the time of this publication. While it is possible that a portion of this indirect and induced employment would occur within the local study area (increase in food workers, etc.), a number of jobs could not (solar power plant equipment manufacturing, etc.). A number of induced and indirect employment jobs

could potentially occur outside of the local study area or California. Therefore, staff concludes it is speculative to quantify what if any numbers of indirect and induced employees may seek permanent housing in the GSEP local study area. However, based on the number of projected indirect and induced employment (as shown in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 10**), it is assumed that the vacancy rate of the local and regional study area (as shown in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE TABLES 2** and **3**) could adequately provide housing for any potential portion of indirect and induced employment population that may permanently relocate to the GSEP local study area and this population would be within projections for the regional study area (as shown in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE TABLE 2**).

Based on these conclusions, staff concludes that under CEQA, inducement of substantial population growth through permanent employment associated either directly or indirectly by the GSEP would be a less than significant impact.

Displace Existing Housing and Substantial Numbers of People

The proposed GSEP site would be located within existing BLM-administered land that contains no existing transportation access or infrastructure, including housing. As such, no housing would be displaced by project construction or operation. Furthermore, staff has determined that no housing would be displaced from required transmission line and other infrastructure linear connections associated with the GSEP, including the expanded Colorado River Substation nearly Blythe (please see the **Transmission System Engineering** section of this RSA for additional analysis).

As discussed above, staff concludes that the required construction workforce of the GSEP would be found in the regional study area and an assumed 15% of workforce temporary inmigration that could occur would not trigger the need for new housing in the local study area based on available hotel/motel rooms and vacant housing units within the local study area. Furthermore, as discussed above, vacancy rates within the local study area offer operational employees (estimated at up to 33 workers), as well as potential indirect and induced employment workers, wishing to relocate within the local study area ample available housing. Therefore, staff concludes that no significant construction or operation-related impacts are expected for the regional and local study area housing supply, availability, or demand, and the GSEP would not displace any populations or existing housing, and it would not necessitate construction of replacement housing elsewhere.

Result in Substantial Physical Impacts to Government Facilities

Physical impacts to public services and facilities are usually associated with population in-migration and growth in an area, which increase the demand for a particular service and lead to the need for expanded or new facilities. Physical impacts to public services and facilities are usually associated with population in-migration and growth in an area, which increase the demand for a particular service, leading to the need for expanded or new facilities. Public service providers serving the GSEP site are located within Riverside County only and represent the local study area. Therefore, the study area for the public services analysis is limited to Riverside County.

As discussed under the subject headings below, the GSEP would not cause significant impacts to service ratios, response times, or other performance objectives relating to law enforcement, schools, parks and recreation, or emergency medical service facilities. Fire protection is analyzed in the **Worker Safety and Fire Protection** section of this Revised Staff Assessment. Please refer to the **Land Use, Recreation, and Wilderness** section of this document for further analysis of recreation impacts.

Police Protection

The GSEP site would be served by the Riverside County Sheriff's Department Colorado River Station at 260 North Spring Street in Blythe. This facility and its staff provides service to the unincorporated areas of Riverside County that stretches from Red Cloud Road on the west, to the Arizona state line on the east, and county line to county line on the north and south. Communities included in this service area are Desert Center, Eagle Mountain, East Blythe, Hayfield, Midland, Nicholls Warm Springs, Ripley, and the Colorado River. Currently, the Riverside County Sheriff's Department average response time to the GSEP site depends on the severity of the incident and the location of the deputies on call; however, response time is estimated at approximately 30 minutes (GSEP 2009a, p 5.8-11).

Construction. During GSEP construction, the site would include security fencing, which would minimize the potential need for the Riverside County Sheriff's Department assistance (GSEP 2009a, p. 3-22). As discussed above, staff considered it is possible that during the peak construction month (worst-case scenario) up to 163 workers could seek local lodging. This number of potential local study area temporary population increase is considered less than significant as these workers are assumed to already live within the regional study area and are currently a part of the Riverside County Sheriff's Department population served. While the GSEP would increase the number of individuals within the local study area during construction, staff agrees with the AFC conclusion that current law enforcement capacity should be sufficient to handle emergencies at the site (GSEP 2009a, p. 5.8-23). Furthermore, there would be no permanent population in-migration occurring from GSEP construction that would increase the local population or would require the need for new or expanded law enforcement facilities or staff levels within the GSEP regional or local study areas.

Operation. Once operational, the proposed GSEP site would include security fencing, controlled access gates, and security lighting (GSEP 2009a, p. 3-22), which would minimize the potential need for the Riverside County Sheriff's Department assistance. As discussed above, the operational workforce for the GSEP is expected to be hired from within the available regional workforce. It is possible that up to 33 operational employees could choose to relocate to the GSEP local area from more distant regional study area locations. In the event any direct operational employees or indirect/induced employees were to permanently relocate to the local study area, it is assumed that some percentage of this population would purchase homes and contribute to the local community through the payment of property taxes. Furthermore, as indicated in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 10**, the GSEP would pay substantial annual property tax, which contributes to local public safety funding. Additionally, as it is likely a number of these employees already reside within Riverside County, only relocating closer to the GSEP site, they would not result in an increase

over the total population policed by the Riverside County Sheriff's Department. Based on these findings, staff concludes that operation of the proposed GSEP would not increase the local population or require the need for new or expanded law enforcement facilities or staff levels within the GSEP regional or local study areas.

Schools

The proposed GSEP site area is served by the Palo Verde Unified School District serving the city of Blythe and other remote areas of Riverside County and the Desert Center Unified School District in Desert Center (GSEP 2009a). **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 6** identifies the schools and year 2006-2007 student enrollments in each of the respective school districts. As shown in **Table 6**, Palo Verde Unified School District (PVUSD), approximately 25 miles east of the GSEP site, offers a full range of educational opportunities with three elementary schools, one middle school, one high school, and a continuation high school.

SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 6
Summary of Schools and Enrollment in Palo Verde and Desert Center School Districts, Year 2006–2007

Palo Verde Unified School District			
School Name	**Community**	**Grades**	**Students**
Felis J. Appleby Elementary School	Blythe	K-5	527
Margaret White Elementary School	Blythe	K-5	666
Ruth Brown Elementary School	Blythe	K-5	652
Blythe Middle School	Blythe	6-8	841
Palo Verde High School	Blythe	9-12	952
Twin Palms Continuation School	Blythe	9-12	97
Desert Center Unified School District			
School Name	**Community**	**Grades**	**Students**
Eagle Mountain Elementary School	Desert Center	K-8	16
Source: Solar Millennium2009a, Tables 5.11-14 and 5.11-15.			

Construction. As discussed above, staff assumes the construction workforce for the GSEP will be hired from within the available regional workforce, with up to 15% of workers potentially seeking temporary local area housing during the workweek to avoid commuting. This temporary local housing need would not result in permanent population in-migration occurring from GSEP construction into the PVUSD. Staff cannot speculate as to the possibility or quantify that any construction workers seeking local temporary housing may bring school aged children seeking enrollment within the PVUSD, as staff assumes workers would only seek local lodging during the workweek from their permanent homes within the regional study area. Therefore, staff concludes that construction of the GSEP would not require the need for new or expanded PVUSD school facilities or staff levels.

Operation. Like all school districts in the state, the PVUSD is entitled to collect school impact fees for new construction within their district under the California Education Code Section 17620. These fees are based on the project's square feet of industrial space. The GSEP AFC estimates that an $18,330 school impact fee will be paid to the PVUSD (GSEP 2009a, p. 5.8-11). This estimated school impact fee was based on 39,000 squre feet of chargeable covered and enclosed space, with the actual determination to be made by the office issuing the building permit (GSEP 2009a, p. 5.8-11). Therefore, the

payment of this fee would ensure compliance with Education Code section 17620 (as described in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 1)**.

As discussed above, the operational workforce for the GSEP is expected to be hired from within the available regional workforce. It is possible that up to 33 operational employees could choose to relocate to the GSEP local area from more distant regional study area locations. Staff also acknowledges that it is possible some population inmigration could occur from induced and indirect employment, but cannot speculate as to a quantity at the time of this publication.

As included in the AFC, a representative of the PVUSD was confident the district had adequate capacity to enroll any new students resulting from the operation of the GSEP (GSEP 2009a, p. 5.8-25). As discussed above, the anticipated payment of a school impact fee associated with the GSEP would help offset any new demands placed on the PVUSD from induced population to the district as a result of the GSEP. Furthermore, in the event any direct operational employees or indirect/induced employees were to permanently relocate to the local study area, it is assumed that some percentage of this population would purchase homes and contribute to the local community through the payment of property taxes. Furthermore, as indicated in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 10**, the GSEP would pay substantial annual property tax. The payment of these property taxes would contribute to local education facility funding. Based on these findings, staff concludes that operation of the proposed GSEP would not require the need for new or expanded school facilities or staff levels within the GSEP regional or local study areas.

Parks and Recreation

The proposed project site is currently undeveloped and unaccessable except by foot. While recreational use of the area is allowed under the BLM California Desert Conservation Area (CDCA) it is infrequent given its remote nature (GSEP 2009a). The nearest park facilities to the GSEP site are located within the city of Blythe, located approximately 30 miles east of the GSEP site. The city of Blythe Parks Department is responsible for the maintenance and upkeep of the area's seven parks and one pocket park (City of Blythe, 2009).

Construction. As discussed above, staff assumes the construction workforce for the GSEP will be hired from within the available regional workforce, with up to 15% of workers potentially seeking temporary local area housing during the workweek to avoid commuting. This temporary local housing need would not result in permanent population in-migration occurring from GSEP construction onto either the local or regional study areas. As discussed above, staff concludes that camping and RV facility use would not be available for GSEP construction workers during the winter months seeking local area housing. Therefore, staff concludes that GSEP construction employment would not require the need for new or expanded recreational facilities or staff levels within the GSEP regional or local study areas.

Operation. As discussed above, the operational workforce for the GSEP is expected to come from within the available regional workforce. It is possible that up to 33 operational employees could choose to relocate to the GSEP local area from more

distant regional study area locations. In the event any direct operational employees or indirect/induced employees were to permanently relocate to the local study area, it is assumed that some percentage of this population would purchase homes and contribute to the local community through the payment of property taxes. Furthermore, as indicated in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 10**, the GSEP would pay substantial annual property tax, which contributes to local recreational facility funding. Therefore, staff concludes that permanent employment associated with the GSEP would not require the need for new or expanded parks and recreational facilities or staff levels within the GSEP regional or local study areas.

Staff received a scoping letter dated December 22, 2009 from Off Road Business Association, Inc. (ORBA) requesting that the Staff Assessment/Draft Environmental Impact Statement consider impacts of the proposed GSEP on recreational uses in the area including, but not limited to, off-highway vehicles (OHV) use, camping, photography, hiking, wildlife viewing, and rockhounding (ORBA2009a). Furthermore, ORBA requested that the analysis of potential impacts to the local economy extend to businesses that sell OHV and OHV related equipment. The GSEP site has historically been used for both off-highway vehicle use and sheep grazing; however, neither activity currently occurs (GSEP 2009a, p. 3-3). If not a designated OHV park, Riverside County Ordinance 10.12.010 states a person must have written permission from the property owner in their possession in order to ride their vehicles on the property they are on (Riverside County Sheriff's Department 2010b). Therefore, the proposed GSEP would have no direct impacts to lands designated for OHV use and no direct or indirect economic impacts to existing OHV or OHV related equipment industries as a result of the GSEP. For additional discussion regarding potential GSEP related impacts to recreational resources, please refer to the **Land Use, Recreation, and Wilderness** section of this document.

Hospitals

The closest hospitals to the proposed GSEP site are the Palo Verde Hospital approximately 25 miles east in Blythe, the John F. Kennedy Memorial Hospital approximately 78 miles west in Indio, and the Desert Regional Medical Center approximately 99 miles west in Palm Springs. Palo Verde Hospital provides intensive care/critical/emergency care on site, including four adult intensive-care beds for critically ill patients, and contracts ambulance service to the hospital via private ambulance service providers within Blythe (GSEP 2009a, p. 5.8-12).

SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 7 identifies the nearest emergency medical service facilities to the site and their respective available services.

SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 7
Hospitals and Services Serving the GSEP Site

Hospital/Address	Available Services
Palo Verde Hospital 251 First Street Blythe, CA	Hospital, blood bank, computerized tomography scan, intensive care unit, labor/delivery/recovery rooms, magnetic resonance imaging, nuclear medicine, outpatient services, ultrasound.
John F. Kennedy Memorial Hospital 47111 Monroe St. Indio, California	Hospital, cardiac and vascular, healthgrades, orthopedic and arthritis institute, outpatient rehabilitation, women and children, emergency department, free physician referral and community education, emergency and express care.
Desert Regional Medical Center 1150 N. Indian Canyon Dr. Palm Springs, California	Hospital, hematologists, pathologists, radiology, general surgeons, emergency medical and surgical service, anesthesiologists, physical therapists, obstetricians, and gynecologists, rehabilitation services.
Source: Solar Millennium2009a, Table 5.11-13.	

Construction. Construction of the proposed GSEP would last 39-months, and include an average of 646 daily construction workers, peaking with a daily workforce of 1,085 workers during month 23 of construction (GSEP 2009a). In the event an on-site accident occurs during project construction, both private ambulance service and Riverside County Fire Department (RCFD) firefighters would provide first responder emergency medical care services. As discussed in the **WORKER SAFETY AND FIRE PROTECTION** section of this RSA, the Riverside County Fire Department and its fire stations, staff and paramedics will be augmented by a one-time and annual payment plan from GSEP to build additional facilities to provide services. **Table 7** provides a listing of local area hospitals that are available to provide emergency and express medical care. Therefore, because of the high number of construction employees would be located on-site, RCFD will receive funds to augment additional service requirement, including emergency medical. Local area emergency medical facilities are expected to adequately handle any worksite accidents requiring their attention. Furthermore, as indicated in the AFC, the local and regional hospitals that would serve the GSEP site all stated construction of the Project would be unlikely to have a significant impact on their ability to serve the community (GSEP 2009a, p. 5.8-23). No additional constraints or physical impacts would occur to the local study area healthcare services or facilities identified in **Table 7** serving the GSEP site.

Operation. The proposed GSEP is expected to require a total of 40 to 50 permanent full-time employees (GSEP 2009a). As discussed above for construction, the available emergency medical and hospital facilities identified in **Table 7** and serving the GSEP site and local study area are expected to adequately handle the permanent addition of 50 on-site staff and the long-term demands of the GSEP, especially given the funding identified in the **WORKER SAFETY AND FIRE PROTECTION** section of this RSA for the Riverside County Fire Department. It is possible that up to 33 operational employees could choose to relocate to the GSEP local area from more distant regional study area locations. In the event any direct operational employees or indirect/induced employees were to permanently relocate to the local study area, staff assumes this population would be adequately served by the local area emergency medical facilities as these facilities are privately owned and expand based on a supply and demand

basis. Furthermore, as indicated in the AFC, the local and regional hospitals that would serve the GSEP site all stated operation of the Project would be unlikely to have a significant impact on their ability to serve the community (GSEP 2009a, p. 5.8-26). Operation of the GSEP is not expected to significantly impact the existing service levels, response times, or capacities of the hospitals serving the GSEP.

Project Closure and Decommissioning

According to Section 3.12 of the applicant's project description, the solar generating facility is expected to have a lifespan of 30 years. At any point during this time, temporary or permanent closure of the solar facility could occur. Temporary closure would be a result of necessary maintenance, hazardous weather conditions, or damage due to a natural disaster. Permanent closure would be a result of damage that is beyond repair, adverse economic conditions, or other significant reasons.

Both temporary and permanent closures would require the applicant to submit to the CEC and BLM a contingency plan or a decommissioning plan, respectively. A contingency plan would be implemented to ensure compliance with applicable LORS, and appropriate shutdown procedures depending on the length of the cessation. A decommissioning plan would be implemented to ensure compliance with applicable LORS, removal of equipment and shutdown procedures, site restoration, potential decommissioning alternatives, and the costs and source of funds associated with decommissioning activities. As described in the **Project Description** section of the Staff Assessment, it is assumed decommissioning of the facility would be similar to that described above for construction of the GSEP.

Staff cannot speculate as to the long-term economic and fiscal effects that closure and decommissioning activities would have on the study area because future conditions are unknown. Upon permanent closure of the GSEP, the beneficial socioeconomic operational impacts such as worker payroll, project expenditures, and local economic stimulus would no longer occur. It should be noted that closure and decommissioning of the GSEP would likely require further environmental impact evaluation.

C.8.4.3 CEQA LEVEL OF SIGNIFICANCE

As discussed in the subject headings above, under CEQA, project-related socioeconomic impacts would be less than significant for population, housing, and public services including law enforcement, schools, parks and recreation, and emergency medical services.

C.8.5 REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would essentially be Unit 1 of the proposed project, including a 125 MW solar facility located within the boundaries of the proposed project as defined by NextEra. This alternative is analyzed for two major reasons: (1) it eliminates about 50 percent of the proposed project area so all impacts are reduced, and (2) by retaining the eastern solar field, which is located on flowing desert washes, it would reduce impacts to the sand dune and playa areas and to the Mojave Fringe-toed Lizard habitat. The alternative would also reduce impacts to wildlife movement by

reducing obstruction of the Palen wash and would maintain, thru both fluvial and Aeolian processes, the dune and sandy habitats. The boundaries of the Reduced Acreage Alternative are shown in **Alternatives Figure 1**.

C.8.5.1 SETTING AND EXISTING CONDITIONS

This alternative is located entirely within the boundaries of the proposed project. It simply eliminates effects to the eastern 125 MW solar field and relocates the gas yard approximately 1.75 miles northwest of its present location. As a result, the environmental setting consists of the western portion of the proposed project, as well as the area affected by the linear project components.

C.8.5.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Induce Substantial Population Growth

Under the Reduced Acreage Alternative, only one generating unit would be constructed. Due to phasing of the construction of the generating units, the peak number of workers required for construction would be reduced from 1,085 to approximately 734. However, this potential reduction in construction would not result in a change to socioeconomic impacts when compared to the proposed GSEP as the regional study area provides a substantial number of construction workers by type to serve the Reduced Acreage Alternative as well as the GSEP (refer to **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 4**). Therefore, any construction workers required for the Reduced Acreage Alternative that could seek temporary local housing during the workweek would be reduced as that compared to the proposed GSEP. As local hotel/motel and vacancy rates indicated ample temporary housing for these workers, and that all workers are expected to come from within within the regional study area, the Reduced Acreage Alternative would not result in population inmigration to the local or regional study area.

It is assumed that operation of this alternative would require a similar number of operational employees as the GSEP. Therefore, it is likely that up to 33 operational employees could choose to relocate to the Reduced Acreage Alternative local area from more distant regional study area locations. In the event any direct operational employees or indirect/induced employees were to permanently relocate to the local study area, staff assumes this population would be adequately served by local area available housing, as shown in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 3**. Based on these conclusions, staff concludes that operation of the Reduced Acreage Alternative would not induce substantial population growth in excess of available local study area housing.

Displace Existing Housing and Substantial Numbers of People

The housing impacts of the Reduced Acreage Alternative would be identical to those of the proposed GSEP, as described in Section C.8.4.2. As discussed above, this alternative would reduce the footprint of the proposed GSEP site. Therefore, as discussed above for the GSEP, no housing would exist within the alternative site and required infrastructure ROW. Therefore, the Reduced Acreage Alternative would not displace any housing during construction or operation.

Local hotel/motel and vacancy rates indicated ample temporary housing for an assumed maximum of 15% of construction workers that may seek temporary local housing during the workweek. It is possible that some (up to 33) operational employees could choose to relocate to the Reduce Acreage Alternative local area from more distant regional study area locations. In the event any direct operational employees or indirect/induced employees were to permanently relocate to the local study area, staff assumes this population would be adequately served by local area available housing, as shown in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 3**. Based on these conclusions, staff concludes that construction and operation of the Reduced Acreage Alternative would not induce substantial population growth in excess of available local and regional study area housing.

Result in Substantial Physical Impacts to Government Facilities

The public services impacts of the Reduced Acreage Alternative would be similar to or less than those of the proposed GSEP, as described. As discussed for the GSEP, it is assumed that all required construction workforce of the Reduced Acreage Alternative would be found in the regional study area and no permanent inmigration would occur. In the event construction workers choose to temporarily seek short-term housing during the workweek (assumed up to 15%), these workers would not impact local public service ratios or capacities similar to that analyzed for the GSEP. Therefore, no new population inmigration would occur from construction that could decrease existing public service providers service levels and ratios, response times, capacities, or require new or expanded facilities serving the Reduced Acreage Alternative regional or local study areas.

Regarding operations, it is assumed this alternative would pay a similar school impact fee to the PVUSD as that described above for the proposed GSEP, thus ensuring compliance with the provisions of Education Code Section 17620). In the event any direct operational employees or indirect/induced employees were to permanently relocate to the local study area, it is assumed that some percentage of this population would purchase homes and contribute to the local community through the payment of property taxes. Furthermore, as indicated in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 10**, the GSEP would pay substantial annual property tax, which contributes to local public safety, school, and recreational facility funding. Any potential reduction in property tax paid by this alternative would be offset by the direct reduction in operational employees that could choose to relocate to the Reduced Acreage Alternative local area. Furthermore, operational employment impacts to emergency medical services would be similar for this alternative as those discussed above for the GSEP. Based on these findings, staff concludes that operation of the Reduced Acreage Alternative is not expected to significantly impact the existing service levels, response times, or capacities of the police, school, recreational facility, or hospitals serving the Reduced Acreage Alternative local study area. For a discussion regarding Reduced Acreage Alternative potential impacts to fire safety resources, please refer to the **Worker Safety and Fire Protection** section of this report.

Cumulative Socioeconomics Effects

The cumulative socioeconomic impacts of the Reduced Acreage Alternative would be similar or less than those of the proposed GSEP, as described. While this alternative could result in a decrease in construction schedule and required workforce, the regional and local study area provides adequate construction and operational employees for the Reduced Acreage Alternative and cumulative development projects. While cumulative projects could combine to increase the demand for localized transient lodging (during construction) and potentially permanent housing (from operations) in the local study area, local study area vacancy rates indicate ample temporary and permanent housing is available to those construction workers seeking temporary housing during the workweek and operational employees choosing to relocate locally to the site. In the event any direct operational employees or indirect/induced employees were to permanently relocate to the local study area, it is assumed that some percentage of this population would purchase homes and contribute to the local community through the payment of property taxes. Furthermore, the Reduced Acreage Alternative would pay property taxes slightly reduced from those indicated for the GSEP in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 10**. Therefore, the Reduced Acreage Alternative would not contribute to adverse cumulative socioeconomic impacts.

C.8.5.3 CEQA LEVEL OF SIGNIFICANCE

Induce Substantial Population Growth

As discussed above in subsection C.8.5.2, and similar to the proposed GSEP, impacts resulting from this alternative to socioeconomics would be less than significant.

C.8.6 DRY COOLING ALTERNATIVE

This section identifies the potential impacts of using air-cooled condenser (ACC) systems rather than the cooling towers proposed by NextEra for the Genesis project. It is assumed that the ACC systems would be located where the cooling towers are currently proposed for each of the two 125 MW power block, as illustrated in **Alternatives Figure 2** (see Section B.3).

This alternative is analyzed because it would reduce the amount of water required for steam turbine cooling from 822 acre-feet per year (AFY) to 66 AFY. This reduction in water use would reduce impacts to water and biological resources.

C.8.6.1 SETTING AND EXISTING CONDITIONS

This alternative is located entirely within the boundaries of the proposed project. It simply eliminates the use of wet-cooling towers and incorporates the use of air-cooled condensers (ACC) in the same location. As a result, the environmental setting would be the same as for the proposed project.

C.8.6.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Induce Substantial Population Growth

The Dry Cooling Alternative would be located in the same location as the proposed GSEP site and would use approximately the same amount of construction and operation workers as the proposed project. Impacts to population and employment are anticipated to be the same as the proposed GSEP, as discussed.

Displace Existing Housing and Substantial Numbers of People

The Dry Cooling Alternative would be located in the same location as the proposed GSEP site and would use approximately the same amount of construction and operation workers as the proposed project. Impacts to housing are anticipated to be the same as the proposed GSEP, as discussed.

Result in Substantial Physical Impacts to Government Facilities

The Dry Cooling Alternative would be located in the same location as the proposed GSEP site and would use approximately the same amount of construction and operation workers as the proposed project. Impacts to public services are anticipated to be the same as the proposed GSEP, as discussed.

Cumulative Socioeconomics Effects

The cumulative socioeconomic impacts of the Dry Cooling Alternative would be similar to those of the proposed GSEP, as described below in Section C.8.8. This alternative would result in a similar construction schedule and required workforce, and the regional and local study area would provide adequate construction and operational employees for the Dry Cooling Alternative and cumulative development projects. While these projects would combine to increase the demand for localized transient lodging and potentially permanent housing in the local study area, a large and ample existing number of hotel/motel rooms are available, and the local study area vacancy rates indicate adequate permanent housing is available to those operational employees choosing to permanently relocate locally to the site. Therefore, the Dry Cooling Alternative would not contribute to adverse cumulative socioeconomic impacts.

C.8.6.3 CEQA LEVEL OF SIGNIFICANCE

Induce Substantial Population Growth

As discussed above in subsection C.8.6.2, and similar to the proposed GSEP, impacts resulting from this alternative to socioeconomics would be less than significant.

C.8.7 NO PROJECT/NO ACTION ALTERNATIVES

There are three No Project/No Action Alternatives evaluated in this section, as follows:

NO PROJECT/NO ACTION ALTERNATIVE #1

No Action on Genesis Solar Energy Project application and on CDCA land use plan amendment

Under this alternative, the proposed Genesis Solar Energy Project would not be approved by the CEC and BLM and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the socioeconomics impacts of the GSEP and the gross public benefits, including capital costs, construction and operation payroll and sales taxes, would not occur at the proposed site. However, the land on which the project is proposed would become available to other uses that are consistent with BLM's land use plan, including another solar project requiring a land use plan amendment. In addition, in the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations

NO PROJECT/NO ACTION ALTERNATIVE #2:

No Action on Genesis Solar Energy Project and amend the CDCA land use plan to make the area available for future solar development

Under this alternative, the proposed Genesis Solar Energy Project would not be approved by the CEC and BLM and BLM would amend the CDCA Land Use Plan of 1980, as amended, to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the project site.
Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. As a result, it is expected that the socioeconomics impacts and the gross public benefits, including capital costs, construction and operation payroll and sales taxes, from the construction and operation of a different solar project would likely be similar to the socioeconomic impacts and benefits from the proposed project. As such, this No Project/No Action Alternative could result in socioeconomic impacts and benefits similar to the impacts under the proposed project.

NO PROJECT/NO ACTION ALTERNATIVE #3:

No Action on Genesis Solar Energy Project application and amend the CDCA land use plan to make the area unavailable for future solar development

Under this alternative, the proposed Genesis Solar Energy Project would not be approved by the CEC and BLM and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar development. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the

site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the CDCA Plan would be amended to make the area unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As such, this No Project/No Action Alternative would not result in socioeconomics impacts nor would it provide the gross public benefits, including capital costs, construction and operation payroll and sales taxes from the proposed project. However, in the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

C.8.8 CUMULATIVE IMPACT ANALYSIS

C.8.8.1 POPULATION AND EMPLOYMENT

Section B.3, Cumulative Scenario, provides detailed information on the potential cumulative solar and other development projects in the project area. Together, these projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis for the proposed project. In summary, these projects are:

- Renewable energy projects on BLM, State, and private lands, as shown on **Cumulative Figure 1** and in **Cumulative Tables 1A and 1B.** Although not all of those projects are expected to complete the environmental review processes, or be funded and constructed, the list is indicative of the large number of renewable projects currently proposed in California.
- Foreseeable future projects in the immediate area, as shown on **Cumulative Impacts Figure 2, I-10 Corridor Existing and Future/Foreseeable Projects, and Cumulative Tables 2 and 3**. Table 2 presents existing projects in this area and Table 3 presents future foreseeable projects in the I-10 Corridor Area. Both tables indicate project name and project type, its location and its status.

These projects are defined within a geographic area that has been identified by the CEC and BLM as covering an area large enough to provide a reasonable basis for evaluating cumulative impacts for all resource elements or environmental parameters. Most of these projects have, are, or would be required to undergo their own independent environmental review under CEQA and/or NEPA. Even if the cumulative projects described in Section B.3 have not yet completed the required environmental processes, they were considered in the cumulative impacts analyses in this Revised Staff Assessment.

Geographic Extent

The area of cumulative effect for socioeconomic resources is Riverside and San Bernardino Counties, CA and La Paz County, AZ. The analysis of cumulative effects considers a number of variables including geographic (spatial) limits, time (temporal) limits, and the characteristics of the resource being evaluated. The geographic scope of cumulative impact analysis is based on the workforce boundaries of the cumulative development projects. While it is possible that the geographic scope of cumulative

effects would extend beyond these three counties, with some workers potentially coming from adjacent counties beyond a two-hour commute radius of the proposed GSEP site, due the similar nature of skill set required by the workforce during construction activities, as well as the number of proposed cumulative renewable energy projects, it is not anticipated that the geographic scope for cumulative impact analysis extent beyond the scope of the direct and indirect effects of the proposed action.

Cumulative Impact Types

The GSEP cumulative analysis will separately assess cumulative impacts of the following two categories of cumulative projects:

- Existing cumulative conditions
- Future foreseeable projects

Effects of Past and Present Projects

A wide variety of past and present development projects contribute to the cumulative conditions for socioeconomics. As shown in **Cumulative Table 2** and in **Cumulative Impacts Figure 2, I-10 Corridor Existing and Future/Foreseeable Projects**, nine projects are ongoing or recently completed in immediate area around the proposed GSEP site and as shown in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 2**, Riverside County population is estimated to have grown by 43 percent between the years 2000 and 2010. Riverside County's growth has resulted in the generation of jobs, revenue, housing, and public services. The projects shown in **Cumulative Table 2** largely represent development intended to meet the demand of Riverside County's increased population.

Effects of Reasonably Foreseeable Future Projects

Socioeconomic considerations are also expected to be affected by the following reasonably foreseeable future projects as follows: a number of large electrical generation and distribution infrastructure development projects are proposed along the I-10 corridor (as shown in **CUMULATIVE IMPACTS Figure 1** and **CUMULATIVE IMPACTS Table 3**); and solar and wind applications proposed on approximately 1,000,000 acres of BLM land in the California Desert District Planning Area as well as a large number of electrical generation and distribution infrastructure development projects proposed on non-federal land in the I-10 corridor (as shown in **CUMULATIVE IMPACTS Table 1b**, **CUMULATIVE IMPACTS Figure 1,** and **CUMULATIVE IMPACTS Table 1a**).

Contribution of the Genesis Solar Energy Project to Cumulative Impacts

Construction. Foreseeable development in the project area includes primarily renewable energy electrical generation and transmission infrastructure projects. With the large number of renewable energy projects occurring within the GSEP regional study area, it is possible that some overlap of construction phasing could occur between the GSEP and the cumulative development projects. **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 8** presents the most recently published data (Year 2006-2016 projections) on labor force characteristics for the cumulative regional study

area pertaining to electrical energy project construction labor skill sets and compares those to major cumulative projects located near the GSEP along the I-10 corridor, including the Palen Solar Power Project (PSPP), Blythe Solar Energy Project (BSPP), Rice Solar Energy Project (RSEP), and the Desert Sunlight PV Project (DSPV).

All cumulative projects identified in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 8** would be expected to draw on the large regional construction workforce in and Riverside/San Bernardino/Ontario MSA, and as shown the MSA offers sufficient regional labor by skill set to staff all projects from within the regional study area. As indicated by **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 8**, cumulative development of these projects in a worst-case scenario of overlapping peak period months could result in the influx of 578 construction workers seeking local lodging within the area as a result of the large renewable energy projects being constructed. Staff concludes this scenario unlikely due to construction scheduling and peak months shown in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 8**, and notes that this assumption does not account for workers doubling up in local lodging situations.

SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 8
Cumulative Project Construction Employment Needs

Trade	GSEP Total # of Workers for Project Construction by Craft – Peak Month (Month 16)	PSPP Total # of Workers for Project Construction by Craft – Peak Month (Month 17)	BSPP Total # of Workers for Project Construction by Craft – Peak Month (Month 16)	RSEP Total # of Workers for Project Construction by Craft – Peak Month (Month 12)	DSPV Total # of Workers for Project Construction by Craft – Peak Month (Months 6-8)	*TOTAL*	Riverside/San Bernardino/ Ontario MSA 2006	Riverside/San Bernardino/ Ontario MSA 2016
Surveyor	0	12	16	0	N/A	*28*	1,420	1,670
Operator	0	90	94	0	N/A	*184*	4,790	5,460
Laborer	198	185	229	52	N/A	*637*	27,930[1]	32,080[1]
Truck Driver	0	35	28	0	N/A	*63*	27,930[1]	32,080[1]
Oiler	0	4	4	0	N/A	*8*	27,930[1]	32,080[1]
Carpenter	44	100	77	50	N/A	*300*	28,850	32,390
Boilermaker	0	11	9	0	N/A	*20*	4,630[2]	5,330[2]
Paving Crew	0	0	0	0	N/A	*0*	630	720
Pipe Fitter	200	326	290	80	N/A	*968*	4,630	5,330
Electrician	105	150	81	56	N/A	*449*	6,740	7,600
Cement Finisher	4	100	80	6	N/A	*197*	4,110	4,690
Ironworker	70	59	42	32	N/A	*246*	19,460	20,800
Millwright	22	25	18	16	N/A	*153*	2,630[3]	2,960[3]
Tradesman	382[6]	10	8	105[7]	N/A	*544*	27,930[1]	32,080[1]
Project Manager	0	3	2	0	N/A	*5*	10,990[4]	12,380[4]
Construction Manager	0	3	2	5	N/A	*10*	4,380	5,110
PM Assistant	0	4	2	0	N/A	*6*	10,990[4]	12,380[4]
Support	0	4	2	0	N/A	*6*	120[5]	130[5]
Support Assistant	0	4	2	0	N/A	*6*	120[5]	130[5]
Engineer	60	10	7	36	N/A	*127*	1,370	1,600
Timekeeper	0	3	2	0	N/A	*5*	10,990[4]	12,380[4]
Administrator	0	6	5	0	N/A	*11*	10,990[4]	12,380[4]
Welder	0	1	1	0	N/A	*2*	3,960	4,640
Total Peak Month	*1,085*	*1,145*	*1,001*	*438*	*622*	*4,291*	--	--
Local Housing Need[10]	*163*	*172*	*150*	*0*[11]	*93*	*578*	--	--

Notes: [1] The "Construction Laborers" category was used; [2] The "Plumbers, Pipefitters, and Steamfitters" category was used; [3] The "Machinists" category was used; [4] The "Supervisors, Construction and Extraction Workers" category was used; [5] The "Helpers-Construction Trades" category was used; [6] Includes: insulators, painters, teamsters, and 'Solar Field Craft". The solar field craft workers include an estimated five solar field installation crews, with each crew including a Foreman, Equipment Operators, Laborers, Electricians, Ironworkers, Carpenters, Masons, and Pipefitter/Welders; [7] Includes Teamesters, Heliostat Assembly Craft, Construction Staff, Subcontractors, and Technical Advisors; [8] Includes Insulators; [9] Includes Painters, Sheetmetal Workers, and Teamsters; [10] Assumes 15% of peak month workforce may seek temporary local housing during workweek; [11] On-site worker camp is provided for RSEP, providing housing for up to 300 trailers, eliminating local housing need; N/A: labor by craft data not available from BLM.
Source: Solar Millennium 2009a and b, GSEP 2009a, SR 2009a, and BLM 2010c.

While this number could impact the amount of local hotel/motel rooms within the local and regional study area, as discussed above for the proposed GSEP a high number of short-term housing units are available within increasing radii commute sheds from the local study area. Furthermore, local housing is available within the cities of Ehrenburg and Quartzsite, AZ. While staff acknowledges that cumulatively workers seeking short-term temporary housing during the workweek to avoid commuting from their homes in the regional study area could increase housing demand and population in the local area, the extent and quantification of these impacts is unknown and speculative. Staff also concludes that like the GSEP, workers seeking RV and campsite lodging from cumulative projects will likely find no availability within the winter months.

Based on the availability of local temporary housing within a one-hour commute shed (as discussed above for the GSEP), it is assumed that ample temporary short-term housing is available for any workers seeking short-term local lodging from a cumulative perspective. Therefore, staff concludes that cumulative project construction within the GSEP local study area would not significantly impact the population projections or require the need for new or expanded housing within the local study area.

Furthermore, as staff concludes that all workers associated with the cumulative projects identified within **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 8** will come from within the regional study area, with up to 15% of these workers potentially seeking short-term temporary housing during the workweek locally, cumulative construction activities would not require the need for new or expanded public services (police, schools, recreation, hospitals) serving the local study area as no permanent population increase would occur. While **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 8** indicates that cumulative development based on staff assumptions could result in up to 578 workers staying within the local study area, as staff concludes this number would fluctuate it is speculative to quantify any potential impacts this could have on local area public services. Therefore, staff concludes construction of the GSEP would not contribute to adverse cumulative socioeconomic impacts.

In addition, short-term construction-related spending activities of the GSEP project are expected to have cumulative economic benefits for the study area (refer below to **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 10**). The cumulative benefits would increase when revenues accrued as a result of the proposed GSEP are combined with spending, and any local revenues accrued as a result of current and future reasonably foreseeable cumulative development projects.

Operation. Operation of the GSEP is expected to result in the potential permanent relocation of up to 33 workers into the local study area. **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 9** presents the most recently published data (Year 2006-2016 projections) on labor force characteristics for the cumulative regional study area pertaining to electrical energy project operational labor skill sets and compares those to major cumulative projects located near the GSEP along the I-10 corridor, including the PSPP, BSPP, RSEP, and the DSPV.

SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 9
Cumulative Project Operational Employment Needs

Trade	GSEP Total # of Workers for Project Operation	PSPP Total # of Workers for Project Operation	BSPP Total # of Workers for Project Operation	RSEP Total # of Workers for Project Operation	DSPV Total # of Workers for Project Operation	*TOTAL*	Riverside/San Bernardino/Ontario MSA 2006	Riverside/San Bernardino/Ontario MSA 2016
Plant and System Operators	--	--	--	--	--	--	2,030	2,380
Power Plant Operators	--	--	--	--	--	--	310	370
Total	*50*	*134*	*221*	*47*	*15*	*467*	*2,340*	*2,750*
Local Housing Need[1]	*33*	*34*	*55*	*12*	*4*	*138*	--	--

[1] BSPP and PSPP use a 25 percent relocation assumption in their respective AFC's. As no assumed percentage was included in the RSEP AFC and DSPV information provided by BLM, this table assumes 25 percent of operational employees will permanently relocate to the cumulative project area. GSEP AFC specifically indicates that up to 33 workers would relocate.
Source: Solar Millennium 2009a and b, GSEP 2009a, SR 2009a, and BLM 2010c.

As shown in **Table 9**, these cumulative projects are expected to result in a total of 138 workers permanently relocating to the local study area. Staff acknowledges that indirect and induced employment from all cumulative projects identified in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 9** could result in limited demand for permanent housing in the local study area. However, staff cannot speculate or quantify this potential at the time of publication. However, it is assumed that the vacancy rate of the local and regional study area (as shown in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE TABLES 2** and **3**) could adequately provide housing for any potential portion of indirect and induced employment population that may permanently relocate to the local study area from cumulative development and this population would be within projections for the regional study area (as shown in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE TABLE 2**).

Based on the most recently published vacancy rates for the local study area (refer to **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 3**), adequate permanent housing units are available to these operational employees who may choose to relocate locally to proposed cumulative development projects. Therefore, the GSEP is not expected to contribute cumulatively to a required need for new housing in the area. While the BSPP, PSPP, and RSEP would not pay a school impact fee, the GSEP would (as indicated in the GSEP analysis above). It is unknown at this time what if any other I-10 solar development projects located within BLM lands would pay school impact fees. However, all cumulative development not located on Federal land would be subject to applicable development fees. Staff assumes that any new cumulative demand on schools by permanent relocations to the local study area would help to be met on some level through the payment of property taxes by the cumulative projects themselves as well as any relocations that purchase homes. The payment of these property taxes would contribute to local public safety, school, and recreational facility funding. As hospitals are private supply and demand based facilities, it is assumed that the cumulative increase in local population can be adequately served by local study area emergency medical facilities. Based on these conclusions, staff concludes that operation of the proposed GSEP would not contribute cumulatively to an increase in the local population or require the need for new or expanded law enforcement, school, recreational, or emergency medical facilities or staff levels within the GSEP regional or local study areas.

The operation of the GSEP is expected to result in long term adverse impacts during operation of the project related to Worker Safety/Fire Protection. Staff believes that cumulative impacts are possible and although they are not highly probable, cumulatively they present a significant impact. Additionally, even though the chances of two or more solar power plants requiring emergency response simultaneously may be low, once again a response to one distant site would preclude a simultaneous response to another solar plant or even a residential or commercial location in a timely and adequate manner due to the great distances involve. Staff therefore believes the impacts on the local fire department would be cumulatively significant. The applicant will develop and implement a fire prevention program for the GSEP independent of any other projects considered for potential cumulative impacts and will be required to fund capital improvements and staffing for the RCFD (please see **WORKER SAFETY-7**). Staff believes that the facility, as proposed by the applicant and with the additional mitigation measures proposed by staff, will then have an insignificant impact on fire, HazMat, or EMS response. Therefore, staff concludes that with mitigation, the GSEP's contribution to a Worker Safety/Fire Protection cumulative impact would be less than significant. Please refer to the **Worker Safety and Fire Protection** section of this report for a detailed discussion of

cumulative impacts to fire protection services. Please refer to the **Land Use, Recreation, and Wilderness** section of this document for further analysis of cumulative recreation impacts.

Decommissioning. The decommissioning of the GSEP is expected to result in similar cumulative impacts related to Socioeconomics as GSEP construction impacts, as described above. It is unknown if the construction or decommissioning of any of the cumulative projects would occur concurrently with the decommissioning of this project, because the decommissioning is not expected to occur for approximately 30 years. As a result, it is unknown if any cumulative impacts related to Socioeconomics could occur during decommissioning of the GSEP. However, based on the cumulative impact analysis above for GSEP construction activities, it is likely the impacts of the decommissioning of the GSEP would not be expected to contribute to cumulative impacts related to Socioeconomics because it is assumed the closure and decommissioning workforce would be drawn from the regional and local study areas. However, impacts to existing population levels, housing, or public services are unknowable at this time that would occur from short-term decommissioning construction activities 30 years in the future.

C.8.9 COMPLIANCE WITH LORS

The GSEP AFC estimates that an $18,330 school impact fee will be paid to the PVUSD (GSEP 2009a, p. 5.8-11). This estimated school impact fee was based on 39,000 square feet of chargeable covered and enclosed space, with the actual determination to be made by the office issuing the building permit (GSEP 2009a, p. 5.8-11). Therefore, the payment of this fee would ensure compliance with Education Code section 17620 (as described in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 1)**.

C.8.10 NOTEWORTHY PUBLIC BENEFITS

Important public benefits discussed under the fiscal and non-fiscal effects section are O&M capital expenditures, construction payroll, and annual property and sales taxes. **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 10** provides a summary of economic benefits of the GSEP.

SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 10
Noteworthy Public Benefits--Related to Genesis Solar Energy Project

Fiscal Benefits	
Estimated annual property taxes	$627,000 per year (If the California property tax exemption for solar systems is not renewed property taxes could be approximately $10,455,000)
State and local sales taxes: Construction	$1.3 million
State and local sales taxes: Operation	$44,000 per year
School Impact Fee	$18,330
Non-Fiscal Benefits	
Total capital costs	$1,000 million
Construction payroll	$165 million
Operations payroll	$6 million
Construction materials and supplies	$14.5 million
Operations and maintenance supplies	$0.5 million per year
Direct, Indirect, and Induced Benefits	
Estimated Direct Employment	
Construction	An average of 646 jobs per month
Operation	40 to 50 full-time jobs
Estimated Secondary Employment	
Construction	446 jobs
Operation	124 jobs
Estimated Secondary Income	
Construction	$26.8 million
Operation	$3.0 million

C.8.11 RESEPONSE TO AGENCY AND PUBLIC COMMENTS

Comments were received both verbally and in writing on the contents of the SA/DEIS from agencies, organizations and members of the public. During the SA/DEIS comment period, no comments related to issues presented in the Socioeconomics and Environmental Justice section of the SA/DEIS were provided to staff.

C.8.12 PROPOSED CONDITIONS OF CERTIFICATION/MITIGATION MEASURES

No conditions of certification/mitigation measures are required as all potential socioeconomic impacts associated with the proposed GSEP and alternatives would be less than significant.

C.8.13 CONCLUSIONS

No significant adverse socioeconomics impacts would occur as result of the construction or operation of the proposed GSEP project. Staff believes the GSEP would not cause a significant adverse direct, indirect, or cumulative impact on population, housing, or public services. In addition, because there would be no adverse project-related socioeconomic impacts, minority and low-income populations would not be disproportionately impacted. The proposed GSEP would benefit the local and regional

study areas in terms of an increase in local expenditures and payrolls during construction and operation of the facility, as well as a benefit to public finance and local economies through taxation. These activities would have a positive effect on the local and regional economy.

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D. ENGINEERING ANALYSIS

D.5 - TRANSMISSION SYSTEM ENGINEERING APPENDIX A COLORADO RIVER SUBSTATION EXPANSION AND GSEP INTERCONNECTION ACTIONS IMPACT ANALYSIS

Testimony of Suzanne Phinney, D.Env.

D.5.1. INTRODUCTION AND PURPOSE

The Energy Commission has the exclusive authority to certify the construction and operation of thermal electric power plants 50 megawatts (MW) or larger and associated facilities. The Energy Commission also has the licensing authority up to the first point of interconnection for transmission facilities. Additionally, under the California Environmental Quality Act (CEQA), the Energy Commission must conduct an environmental review of the "whole of the action," which may include facilities not licensed by the Energy Commission.

Energy Commission staff has prepared this Transmission System Engineering (TSE) Appendix to the Revised Staff Assessment (RSA) for the Genesis Solar Energy Project (GSEP) to discuss reasonably foreseeable actions needed to interconnect the 250 MW GSEP to Southern California Edison's (SCE) existing Devers- Palo Verde (DPV) 500 kV transmission line. The reasonably foreseeable actions include: 1) expanding the proposed and already permitted Colorado River Substation (CRS): 2) looping the DPV 500 kV line and terminating the new Devers-Colorado River (DCR) transmission line into the CRS; 3) modifying existing 220 kV structures; 4) constructing a distribution line for CRS light and power; 5) connecting the last tower of the GSEP tie-line to the CRS; and 6) connecting telecom system components between the GSEP and the CRS, including an underground telecom line which would follow the GSEP gen-tie.

These actions in total comprise the CRS expansion and interconnected actions project. The first four elements would allow SCE to interconnect multiple solar development projects in the Blythe area of the Mohave Desert and therefore are reasonably foreseeable actions common to all the projects. The last two elements are specific to the GSEP project.

Certain actions have already been analyzed and permitted. The CRS (original footprint), looping of the DPV kV line, and construction of the new distribution line for CRS light and power were analyzed in the Devers – Palo Verde No. 2 500 kV Transmission Line (DPV2) Final Environmental Impact Statement/Environmental Impact Report (FEIS/FEIR). The FEIS/FEIR for the permitted Desert Southwest Transmission Line Project also analyzes the CRS original footprint as does Appendix B of the Energy Commission Revised Staff Assessment / Draft Environmental Assessment (RSA/DEA) for the Blythe Energy Project Transmission Line (BEPTL).

The Bureau of Land Management (BLM) is conducting an environmental analysis of the GSEP, pursuant to the National Environmental Policy Act (NEPA). Similar to the GSEP, the CRS would be located on land under BLM's jurisdiction. It is expected that SCE would submit a separate application to the BLM for the CRS expansion. The CRS expansion would also be subject to permitting by the California Public Utilities Commission (CPUC) and would require a Certificate for Public Convenience and

Necessity (CPCN). Therefore, the BLM and CPUC would conduct NEPA and CEQA analyses of the expansion of the CRS as part of the permitting process.

The totality of actions comprising the CRS expansion and GSEP interconnection actions are described in this Appendix. Those actions that have not already been permitted are evaluated pursuant to CEQA.

SCE proposes to design, construct and operate the CRS. SCE has provided a project description for the substation expansion and interconnection actions (TTEC 2010p). This project description is a planning level description and site-specific engineering and design documents will be prepared at a later date. Therefore this CEQA analysis provides as detailed an analysis as possible with the information available for the project at this time.

The purpose of staff's analysis is to inform the Energy Commission, interested parties and the general public of the potential environmental and public health effects caused by the approval of the GSEP. The analysis draws conclusions as to the likelihood that the substation expansion and interconnection actions could be accomplished with no significant environmental impacts, and identifies mitigation measures that could be enacted to ensure substation expansion and interconnection actions would not cause significant impacts. The analysis discusses environmental issues that generally reflect the CEQA checklist (Appendix G), but does not include sections specific to power plant operations (Facility Design, Power Plant Efficiency, Power Plant Reliability, and Transmission Line Safety and Nuisance). The construction-related analysis and proposed mitigation measures in those sections of the RSA for the GSEP project provide a general understanding of the potential impacts in those areas that could possibly, but not likely, be caused by the substation expansion and GSEP interconnection actions.

D.5.2. DESCRIPTION OF THE CRS EXPANSION AND GSEP INTERCONNECTION ACTIONS PROJECT

This section describes the CRS expansion needed to interconnect solar development projects in the Blythe area of the Mohave Desert and the interconnection actions needed specific to the GSEP. These actions are collectively referred to as the CRS Expansion and GSEP Interconnection Actions Project (CRS/GSEP Project).

D.5.2.1 PROJECT LOCATION

The CRS/GSEP Project (Figure 1) would be located on an approximately 140 acre parcel of land located approximately 1.5 miles south of Interstate 10 and 4.75 miles east of Wiley Well Road, in the County of Riverside, California. The expanded substation would be generally located in the eastern portion of the parcel. The approximate center of the CRS/GSEP project would be at 33.59 degrees north and 114.82 degrees west. However, the specific location of the substation may shift up to 700 ft. to the west staying with the area encompassed by environmental surveys (TTEC 2010p).

The GSEP gen-tie would start at the GSEP site and proceed approximately 7 miles to the southeast until it reaches the existing Blythe Energy Transmission Line (BETL).

From that point, the GSEP tie-line would be strung eastward along existing BETL poles. Once reaching the CRS, the gen-tie would come up around the western side of the substation and would enter from the north.

The proposed CRS/GSEP Project site is on a BLM-owned parcel that would be granted for use by SCE. The proposed location for the CRS/GSEP Project is designated Open Space-Rural in the Riverside County General Plan. Portions of the County's eastern half are located within a Specific Area Plan boundary. However; the proposed CRS/GSEP Project site is included in the Eastern Riverside County Areas that are not located within an Area Plan. The proposed CRS/GSEP project site as well as the surrounding area is zoned Open Space-Rural (OS-RUR). Single-family residential uses are permitted at a density of one dwelling unit per 20 acres.

D.5.2.2 PROJECT DESCRIPTION

SCE proposes to construct the following elements; these elements have not yet been permitted:

- **Colorado River Substation Expansion**: SCE would expand the 500 kV switchyard previously approved as part of the DPV2 CPCN, on approximately 45 acres of land, into a full 500/220 kV substation on approximately 90 acres of land. The expanded substation would be 1,500 feet by 2,400 feet surrounded by a wall with two gates.
- **Generation Tie-line Connection:** SCE would connect the GSEP 220 kV gen-tie into the CRS by installing the last span of conductor between the 220 kV switchrack and the first GSEP transmission line north of the substation.[1] There would be a single-circuit lattice steel (LST) or tubular steel pole (TSP) structure just north of the Colorado River Substation for the connection of the GSEP gen-tie line to a 220 kV position inside the Colorado River Substation.
- **Telecommunications Facilities**: Optical ground wire (OPGW) would be strung on the GSEP gen-tie and would terminate inside the Project substation. SCE would install the last span of fiber optics cable between the 220kV switchrack and the first GSEP transmission line structure north of CRS. SCE would make the final terminations to associated communications equipment installed inside both SCE's CRS and the GSEP substation.

  GSEP would construct a redundant telecom line underground along the GSEP tie-line to the CRS. This line would be installed in a 5 inch PVC conduit. Starting from the GSEP, the line would be would be co-located with the GSEP natural gas pipeline and access road to the existing BETL, and from that point, the line would be within the right of way of existing BETL poles until it reaches the CRS. Once at the CRS, the underground telecom line would follow the route of 6 new poles that would be constructed to allow the gen-tie to enter the CRS from the north.

  Ground disturbances associated with construction of the gen-tie from the GSEP to the BETL have been analyzed in the GSEP RSA. Staff assumes that ground disturbance from placement of an underground telecom line would be similar.

[1] The construction of the 220kV gen-tie structure to the north and west of the CRS Substation is part of the GSEP project and is analyzed in the Revised Staff Assessment.

Already permitted actions include the following. As noted earlier, these are briefly described here but are not evaluated in this Appendix.

- **Colorado River Substation***:* SCE would construct a new 500 kV switchyard, including appropriate support facilities, on approximately 45 acres of land.
- **Transmission Lines**: SCE would loop the existing DPV 500 kV transmission line and terminate the new DCR transmission line into the CRS by adding a total of approximately 2,000 feet of new transmission lines (three lines of approximately 1,000 feet each located side-by-side within a corridor approximately 1,000 feet wide).

  SCE would modify existing 220 kV structures. The necessary crossing of the new NextEra Resources Buck-Julian Hinds 220 kV transmission lines by the proposed SCE 500 kV loop-in lines may require modifications. New tubular steel poles (details would be determined during detailed engineering phase) to modify the construction at the crossing location may be needed to replace the existing 220kV poles.

- **Distribution Line for Station Light and Power**: SCE would construct approximately 2,500 feet of 12 kV overhead distribution line and approximately 1,000 feet of underground distribution line to connect a nearby existing distribution system to the CRS to provide substation light and power.

D.5.2.3 CONSTRUCTION AND OPERATIONS

SCE has provided the following information regarding construction of the CRS/GSEP Project (TTEC 2010p).

2.3.1 Colorado River Substation Expansion

2.3.1.1 Construction Actions

Expansion of the CRS would entail clearing existing vegetation and installing a temporary chain link fence to surround the construction site. The site would be graded in accordance with approved grading plans. The area to be enclosed by the proposed substation perimeter wall would be graded to a slope that varies between one and two percent and compacted to 90 percent of the maximum dry density.

The CRS expansion site is located east of the Chuckwalla Dunes area and shows evidence of surface storm water runoff through the proposed site. While no designated blue-line streams are located within the substation location, it may still necessary to redirect surface water flow around one side of the substation. The combined CRS (expansion and original footprint) and the project's northern boundary may need to be protected from surface runoff by the installation of a berm designed to direct the flow around both sides of the substation pad. These drainage improvements would potentially disturb an area approximately 80 feet wide around three sides of the fenced in substation, resulting in a total permanent disturbance area of approximately 20 acres.

Internal surface runoff would be directed towards a detention basin located at the south end of the substation. The basin would measure approximately 120 feet by 200 feet occupying approximately one-half acre and would be enclosed by an 8-foot high chain-

link fence and one 20-foot wide double drive gate. The final site drainage design would be subject to the conditions of the grading permit obtained from the County of Riverside.

Table 1 provides the approximate volume and type of earth materials to be used or disposed of at the CRS/GSEP Project site (within the substation wall and the required drainage structures outside/around the substation) as a result of substation expansion. The numbers presented in **Table 1** are preliminary and subject to change as the result of detailed engineering.

Table 1. Colorado Substation Expansion Site - Ground Surface Improvement Materials and Estimated Volumes

Element	Material	Approximate Volume (yd^3) (1)
Site Cut (2) Site Fill (2)	Soil Soil	190,000 190,000
Waste Removal (export)	Soil/Vegetation	20,000
Substation Equipment Foundations	Concrete	10,000
Equipment and cable trench excavations (3)	Soil	10,000
Cable Trenches (4)	Concrete	200
Internal Driveway	Asphalt concrete Class II aggregate base	1,200 2,800
External Driveway	Asphalt concrete Class II aggregate base	0 0
Substation Rock Surfacing	Rock, nominal 1 to 1-1/2 inch per SCE Standard	15,000

Source: TTEC 2010p

(1) The material volumes presented in Table 1 are for the 45 acre Project site work only. Additional material volumes needed for surface improvement of the 45 acre Colorado River Substation are included in the previously approved DPV2 FEIS/FEIR.
(2) The design concept would be intended to balance the earthwork quantities, utilizing any site cut material as site fill material, where feasible
(3) Excavation “spoils” would be placed on site during the below-ground construction phase and used to the extent possible for the required on-site grading
(4) Standard cable trench elements are factory fabricated, delivered to the site and installed by crane. Intersections are cast-in-place concrete.

Additional temporary land disturbance (up to approximately 10 acres) adjacent to the substation location may be necessary for temporary equipment storage and material staging areas associated with construction efforts.

Prior to the start of construction, SCE expects to conduct a geotechnical study of the CRS/GSEP Project site that would include an evaluation of the depth to the water table, evidence of faulting, liquefaction potential, physical properties of subsurface soils, soil resistivity, slope stability, and the presence of hazardous materials.

After the CRS/GSEP Project site is graded, below grade facilities would be installed. Below grade facilities would include a ground grid, underground conduit, trenches, and all required foundations. The design of the ground grid would be based on soil

resistively measurements collected during the geotechnical investigation conducted prior to construction. Above grade installation of substation facilities associated with the substation expansion (i.e., buses, circuit breakers and steel structures) would commence after the below grade structures are in place.

Construction of the substation expansion would require the limited use of hazardous materials such as fuels, lubricants, and cleaning solvents. All hazardous materials would be stored, handled and used in accordance with applicable regulations. Material Safety Data Sheets would be made available at the construction site for all crew workers.

The Storm Water Pollution Prevention Plan (SWPPP) prepared for the CRS/GSEP Project would provide the locations for storage of hazardous materials during construction, as well as protective measures, notifications, and cleanup requirements for any incidental spills or other potential releases of hazardous materials.

Construction of the substation expansion would result in the generation of various waste materials that can be recycled and salvaged. Waste items and materials would be collected by construction crews and separated into roll off boxes at the materials staging area. All waste materials that are not recycled would be categorized by SCE in order to assure appropriate final disposal. Nonhazardous waste would be transported to local authorized waste management facilities. Soil excavated for the substation expansion would either be used as fill or disposed of off-site at an approved licensed facility.

Any damage to existing roads as a result of construction would be repaired once construction is complete, in accordance with local agency requirements. Following completion of construction activities, SCE would also restore all areas that were temporarily disturbed by construction of the substation expansion to as close to preconstruction conditions as possible, or, where applicable, to the conditions agreed upon between the BLM and SCE. In addition, all construction materials and debris would be removed from the area and recycled or properly disposed of off-site at local authorized waste management facilities. SCE would conduct a final inspection to ensure that cleanup activities were successfully completed.

D.5.2.3.1.2 Land Disturbance

Table 2 provides a preliminary estimate of temporary and permanent land disturbance related to construction of the substation expansion (outside the substation fence and the required drainage structures outside/around the substation). The numbers presented in **Table 2** are preliminary and may change as the result of detailed engineering.

Table 2. Project Construction Estimated Land Disturbance Summary[1]

Construction Activity	Acres Temporarily Disturbed	Acres Permanently Disturbed
Substation Grading	-	45.0
Drainage/Side Slopes	-	20.0
Access Road	-	-
Staging Area	10.0	-
Total Acres Disturbed	10.0	65.0

Source: TTEC 2010p

[1] The land disturbance estimates presented in Table 2 are for the 45 acre Project site work only. Initial land disturbance for the 45 acre switchyard grading and access road are included as part of the DPV2 FEIS/FEIR.

D.5.2.3.1.3 Construction Labor and Equipment

The estimated elements, materials, number of personnel and equipment required for construction of the substation expansion are summarized below in **Table 3** below. The numbers presented in **Table 3** are preliminary and may change as the result of additional detailed engineering.

In addition to the information provided in **Table 3**, a temporary office trailer and equipment trailer may be placed within the proposed construction area during the construction phase of the substation expansion.

Construction would be performed by either SCE construction crews or contractors, depending on the availability of SCE construction personnel at the time of construction. Contractor construction personnel would be managed by SCE construction management personnel. SCE anticipates a minimum of approximately 25 construction personnel working on any given day.

SCE anticipates that crews would work concurrently whenever possible; however, the estimated deployment and number of crew members would depend on city permitting, material availability, and construction scheduling.

Construction activities would generally be scheduled during daylight hours in accordance with applicable noise abatement ordinances. In the event construction activities need to occur on different days or hours, SCE would obtain variances as necessary from Riverside County and other entities.

Table 3. Project Equipment and Labor Estimates (Preliminary)

Activity and number of Personnel	Number of Work Days	Equipment and Quantity	Duration of Use (Hours/Day)
Survey (2 people)	10	2-Survey Trucks (Gasoline)	8
Grading (8 people)	60	1-Dozer (Diesel) 2-Loader (Diesel) 1-Scraper (Diesel) 1-Grader (Diesel) 2-Water Truck (Diesel) 2-4X4 Backhoe (Diesel) 1-4X4 Tamper (Diesel) 1-Tool Truck (Gasoline) 1-Pickup 4X4 (Gasoline)	4 4 3 3 2 2 2 2 2
Fencing (4 people)	25	1-Bobcat (Diesel) 1-Flatbed Truck (Gasoline) 1-Crewcab Truck (Gasoline)	8 2 4
Civil (8 people)	90	1-Excavator (Diesel) 1-Foundationauger (Diesel) 2-Backhoes (Diesel) 1-Dump truck (Diesel) 1-Skip Loader (Diesel) 1-Water Truck (Diesel) 2-Bobcat Skid Steer (Diesel) 1-Forklift (Propane) 1-17 Ton Crane (Diesel) 1-Tool Truck (Gasoline)	4 5 3 2 3 3 3 4 2 hours/day for 45 days 3
Mechanical-Electrical Equipment Room (6 people)	60	1-Carry-all Truck (Gasoline) 1-tool truck (Gasoline) 1-Stake Truck (Gasoline)	3 2 2
Electrical (10) people)	120	2-Scissor Lifts (Propane) 2-Manlifts (Propane) 1-Reach Manlift (Propane) 1-15 Ton Crane (Diesel) 1-Tool Trailer 3-Crew Trucks (Gasoline)	3 3 4 3 3 2
Wiring (6 people)	90	1-Manlift (Propane) 1-Tool Trailer	4 3
Maintenance Crew Equipment Check (2 people)	30	2-MaintenanceTrucks (Gasoline)	4
Testing (2 people)	90	1-Crew Truck (Gasoline)	3
Asphalting (6 people)	40	2-Paving Roller (Diesel) 1-Asphalt Paver (Diesel) 1-Stake Truck (Gasoline) 1-Tractor (Diesel) 1-Dump Truck (Diesel) 2-Crew Trucks (Gasoline) 1-Asphalt Curb Machine (Diesel)	4 4 4 3 3 2 3

Source: TTEC 2010p

D.5.2.3.2 Generation Tie Line Connection

D.5.2.3.2.1 Construction Actions

Wire stringing of 220 kV conductor includes the installation of primary conductor and overhead ground wire (OHGW), vibration dampeners, weights, spacers, and

suspension and dead-end hardware assemblies. Insulators and stringing sheaves (rollers or travelers) are typically attached during the steel erection process.

Wire-stringing activities would be conducted in accordance with SCE specifications, which is similar to process methods detailed in Institute of Electrical and Electronics Engineers Standard (IEEE) 524-2003, Guide to the Installation of Overhead Transmission Line Conductors. To ensure the safety of workers and the public, safety devices such as traveling grounds, temporary grounding grid/mats around stringing equipment, guard structures, and radio equipped public safety roving vehicles and linemen would be in place prior to the initiation of wire-stringing activities.

The following four steps describe the wire installation activities utilized by SCE:

- **Step 1**: Sock Line, Threading: Typically, a lightweight sock line is passed from structure to structure, which would be threaded through the wire rollers in order to engage a camlock device that would secure the pulling sock in the roller. This threading process would continue between all structures through the rollers of a particular set of spans selected for a conductor pull.
- **Step 2**: Pulling: The sock line would be used to pull in the conductor pulling cable. The conductor pulling cable would be attached to the conductor using a special swivel joint to prevent damage to the wire and to allow the wire to rotate freely to prevent complications from twisting as the conductor unwinds off the reel. A piece of hardware known as a running board would be installed to properly feed the conductor into the roller; this device keeps the bundle conductor from wrapping during installation.
- **Step 3**: Splicing, Sagging, and Dead-ending: After the conductor is pulled in, the conductor would be sagged to proper tension and dead-ended to structures.
- **Step 4**: Clipping-in, Spacers: After the conductor is dead-ended, the conductors would be secured to all tangent structures; a process called clipping in. Once this is complete, spacers would be attached between the bundled conductors of each phase to keep uniform separation between each conductor.

SCE estimates that an area of 150 feet by 500 feet (1.72 acres) would be optimal for tensioning equipment setup sites. An area of 150 feet by 300 feet (1.03 acres) would be optimal for pulling and equipment set-up sites; however, crews can work from within slightly smaller areas when space is limited. Each stringing operation would include one puller positioned at one end and one tensioner and wire reel stand truck positioned at the other end.

An OHGW for shielding would be installed on the transmission line. The OHGW would be installed in the same manner as the conductor and in conjunction with installation of the conductor.

D.5.2.3.2.2 Land Disturbance

Table 4 provides an estimate of temporary and permanent land disturbance areas related to connection of the GSEP gen-tie. The numbers presented in **Table 4** are preliminary and may change as the result of detailed engineering.

Table 4. GSEP Gen-Tie Construction – Land Disturbance

	Site Quantity	Disturbed Acreage Calculation	Acres Disturbed During Construction	Acres Temporarily Disturbed	Acres Permanently Disturbed
Install New 220 kV Gen-Tie Span to Switchrack (1)	1	150' x 300'	1.03	1.03	0.00
Total Estimated Disturbed Acres (2)			**1.03**	**1.03**	**0.00**

Notes to Table 4

1. Structure construction work, including foundation installation, structure assembly & erection is the responsibility of the Developer, and is therefore not described here. All disturbance herein is solely for the installation of the final SCE-owned span between the final structure and the substation 220kV switchrack. This work would require only temporary disturbance area to set up wire stringing and pulling equipment.

2. The disturbed acreage calculations are estimates based upon SCE's preferred area of use for the described project feature, the width of the existing right-of-way, or the width of the proposed right-of-way and, they do not include any new access/spur road information; they are subject to revision based upon final engineering and review of the project by SCE's Construction Manager and/or Contractor awarded project.

Note: All data provided in this table is based on planning level assumptions and may change following completion of more detailed engineering, identification of field conditions, availability of material, and equipment, and any environmental and/or permitting requirements.

Source: TTEC 2010p

D.5.2.3.2.3 Construction Labor and Equipment

Table 5 identifies the equipment and workforce needed to connect the GSEP gen-tie to the CRS.

Table 5. Construction Equipment and Workforce Estimates by Activity to Install GSEP 220 kV Gen-Tie

Work Activity				Activity Production			
Primary Equipment Description	Estimated Horse-Power	Probable Fuel Type	Primary Equipment Quantity	Estimated Workforce	Estimated Schedule (Days)	Duration of Use (Hrs/Day)	Estimated Production Per Day
1-Ton Crew Cab Truck, 4x4	300	Diesel	2		2	8	
Wire Truck/Trailer	350	Diesel	2		2	2	
Dump Truck (Trash)	350	Diesel	1		2	2	
Rough Terrain Crane	350	Diesel	1		2	2	
22-Ton Manitex	350	Diesel	2		2	8	0.37 Mile/Day
30-Ton Line Truck	350	Diesel	4		2	6	
Static Truck/ Tensioner	350	Diesel	1		2	6	
Sock Line Puller	300	Diesel	1		1	6	
Bull Wheel Puller	525	Diesel	1		1	6	
580 Case Backhoe	120	Diesel	1		2	2	
Lowboy Truck/Trailer	500	Diesel	2		2	2	

Crew Size Assumptions: #1 Conductor & GW Installation = one 20-man crew
Source: TTEC 2010p

D.5.2.3.3 Telecommunication System

D.5.2.3.2.1 Construction Actions

A telecommunication system would be required in order to provide monitoring and remote operation capabilities of the electrical equipment at the GSEP Substation, and transmission line protection. To provide this system, SCE would build (subject to confirmation with NextEra for the optical ground wire - OPGW) line protection, Supervisory Control and Data Acquisition (SCADA) and telecommunications circuit from the GSEP Substation to the CRS Substation on an optical system utilizing OPGW on the 220 kV gen-tie line. For purposes of this analysis, it is assumed that the fiber optic cable would be installed at the same time as the 220 kV gen-tie line and only limited equipment would be required for the additional stringing of the cable. The environmental analysis presented in the RSA encompasses impacts from the stringing of fiber optic cable along the gen-tie.

SCE would construct a duct bank from the CRS mechanical-electrical equipment room (MEER) to the new transmission tower of the GSEP 220kV gen-tie. The duct bank from the MEER would contain one 5-inch duct. The trench would be dug 36 inches deep and 18 inches wide. The conduit would be laid in and then covered with slurry. The slurry

would be covered with soil that came from the excavation. The total length of the duct would be approximately 1,000 feet.

To provide redundancy, a telecom line would also be constructed underground from the GSEP to the CRS. This line would be installed along the GSEP tie-line in a 5-inch PVC conduit. No information has been provided on construction of the redundant telecom line. Staff assumes that, given the similar size to the MEER conduit, installation of the underground telecom line would require a trench dug 36 inches deep and 18 inches wide.

D.5.2.3.3.2 Land Disturbance

Table 6 provides a preliminary estimate of temporary and permanent land disturbance related to installation of the above-ground telecommunication system between the CRS and the GSEP Substation. The numbers presented in **Table 6** are preliminary and may change as the result of detailed engineering.

Table 6. CRS/GSEP Project Telecommunication System Construction – Estimated Land Disturbance

Construction Activity	Acres Temporarily Disturbed	Acres Permanently Disturbed
Duct from Colorado River Substation telecom vault to first 220kV tower outside station[1]	0.03	-
Total Acres Disturbed	0.03	-

[1] 1,000 feet long by 1.5 feet wide trench
Source: TTEC 2010p

D.5.2.3.2.3 Construction Labor and Equipment

Table 7 identifies the equipment and workforce needed to construct the proposed telecommunications facilities. The numbers presented in **Table 7** are preliminary and subject to change as the result of detailed engineering.

Table 7. Telecommunication System Construction Equipment and Workforce Estimates by Activity

Construction Activity	Number Of Personnel	Number Of Days	Equipment Requirements
Trench Construction	5	4	2-crew trucks (gas/diesel) 1-backhoe (diesel) 1-stakebed truck (diesel) 1-concrete mixer (diesel)
Underground Fiber Cable Installation	5	2	1-crew trucks (gas/diesel) 2-line trucks (diesel)
Telecommunications Installation Crew	2	10	2-vans (gas)

Source: TTEC 2010p

D.5.2.3.4 Best Management Practices and Design Measures

Conditions of Certification, Best Management Practices (BMPs) and design measures included in the Staff Assessment and RSA for the GSEP may be applicable to the CRS substation expansion and interconnection facilities. Staff recommends that these measures be considered by SCE when constructing the CRS expansion and interconnection facilities. The CPUC would license the CRS expansion and interconnection actions and may require additional measures beyond those identified in the following sections, pending further environmental analysis conducted by other agencies pursuant to CEQA and NEPA.

SCE would be the builder of these proposed facilities and would be expected to operate under these standard SCE BMPs[2] along with project specific mitigation.

Air Quality

AIR-1 The construction activities would be in compliance with AQMD requirements, as applicable to the project.

Aesthetics and Visual Resources

AES-1 LSTs and TSPs would be galvanized steel with a dulled grey finish that minimizes reflected light.

AES-2 Insulators that minimize reflection of light would be utilized.

AES-3 Substation equipment would have materials that minimize reflective light.

AES-4 If chain link fence is used, it would have a dulled-finish.

AES-5 The substation lighting would be designed to be manually operated for non-routine nighttime work.

Biological Resources

BIO-1 Preconstruction biological clearance surveys would be conducted to identify special-status plants and wildlife.

BIO-2 SCE would prepare a Worker Environmental Awareness Program (WEAP). All construction crews and contractors would be required to participate in WEAP training prior to starting work on the project.

BIO-3 All transmission and subtransmission towers and poles would be designed to be avian-safe in accordance with the suggested practices for Avian Protection on Power Lines: the State of the Art in 2006 (Avian Power Line Interaction Committee 2006).

[2] These measures were identified in project descriptions provided by SCE for similar transmission-related actions and are assumed to apply to this project, depending on the action, as well.

Cultural Resources

CR-1 A cultural resource inventory of the project area would be conducted for cultural resources prior to any disturbance. All surveys would be conducted and documented as per applicable laws, regulations, and guidelines.

CR-2 To the extent feasible, all ground-disturbing activities shall be sited to avoid or minimize impacts to cultural resources listed as, or potentially-eligible for listing as, unique archaeological sites, historical resources, or historic properties.

CR-3 A protective buffer zone would be established and maintained around each recorded archaeological site within or immediately adjacent to the ROW.

Paleontology Resources

PALEO-1 A paleontologist would conduct a pre-construction field survey of the project area.

PALEO-2 Prior to construction, a certified paleontologist would supervise monitoring of construction excavations.

Geology and Soils

GEO-1 Prior to final design of substation facilities, and transmission and, be conducted to identify site-specific geologic conditions and potential geologic hazards in sufficient detail to support sound engineering practices.

GEO-2 For new substation construction, specific requirements for seismic design would be followed based on the Institute of Electrical and Electronic Engineers' 693 "Recommended Practices for Seismic Design of Substations."

GEO-3 New access roads, where required, would be designed to minimize ground disturbance during grading.

GEO-4 Cut and fill slopes would be minimized by a combination of benching and following natural topography where feasible.

GEO-5 Any disturbed areas associated with temporary construction would be returned to preconstruction conditions (to the extent feasible) after the completion of project construction.

Hazards and Hazardous Waste

HAZ-1 A Phase I ESA would be performed at each new or expanded substation location and along newly acquired transmission subtransmission line ROWs.

HAZ-2 SCE would implement standard fire prevention and response practices for the construction activities.

HAZ-3 As applicable, SCE would follow fire codes per Cal Fire Power Line Fire Prevention Fire Guide requirements for vegetation clearance during construction of the project to reduce the fire hazard potential.

HAZ-4 Hazardous materials and waste handling would be managed in accordance with the following SCE plans and programs:

- *Spill Prevention, Countermeasure, and Control Plan (SPCC Plan).* In accordance with Title 40 of the CFR, Part 112, SCE would prepare a SPCC for proposed and/or expanded substations, as applicable.
- *Hazardous Materials Business Plans (HMBPs).* Prior to operation of new or expanded substations, SCE would prepare or update and submit, in accordance with Chapter 6.95 of the CHSD, and Title 22 CCR, an HMBP, as applicable.
- *Storm Water Pollution Prevention Plan (SWPPP):* A project-specific construction SWPPP would be prepared and implemented prior to the start of construction of the transmission line and substation.
- *Health and Safety Program:* SCE would prepare and implement a health and safety program to address site-specific health and safety issues.
- *Hazardous Materials and Hazardous Waste Handling:* A project specific hazardous materials management and hazardous waste management program would be developed prior to initiation of the project. Material Safety Data Sheets would be made available to all Project workers
- *Emergency Release Response Procedures:* An Emergency Response Plan detailing responses to releases of hazardous materials would be developed prior to construction activities. All construction personnel, including environmental monitors, would be aware of state and federal emergency response reporting guidelines.

HAZ-5 Hazardous materials would be used or stored and disposed of in accordance with Federal, State, and Local regulations.

HAZ-6 The substation would be grounded to limit electric shock and surges that could ignite fires.

HAZ-7 All construction and demolition waste would be removed and transported to an appropriately permitted disposal facility.

Hydrology and Water Quality

HYDRO-1 Construction equipment would be kept out of flowing stream channels as feasible.

HYDRO-2 Towers would be located to avoid active drainage channels, especially downstream of steep hill slope areas, to minimize the potential for damage.

Land Use

LAND USE-1 SCE shall provide 14 days of advance notice of the start of construction to property owners located within 300 feet of construction-related activities.

Noise

NOISE-1 SCE would comply with local noise ordinances.

Transportation and Traffic

TRANS-1 Traffic control services would be used for equipment, supply delivery, and conductor stringing, as applicable.

TRANS-2 Construction traffic would be scheduled for off-peak hours to the extent feasible and would not block emergency equipment routes.

TRANS-3 If work requires modifications or activities within local roadway and railroad ROWs, appropriate permits would be obtained prior to the commencement of construction activities.

D.5.3.0 ANALYSIS OF COLORADO RIVER SUBSTATION EXPANSION AND GSEP INTERCONNECTION ACTIONS

This section examines the potential impacts of reasonably foreseeable actions required for the operation of the GSEP. The CRS expansion and connection of GSEP gen-tie and telecommunications facilities would be built by SCE and would be fully evaluated in a future environmental document prepared in response to an application to the BLM for a lease to construct the CRS. Because no application has yet been submitted and the SCE project is still in the planning stages, the level of impact analysis presented is based on available information.

The purpose of this analysis is to inform the Energy Commission and interested parties, and the general public of the potential environmental and public health effects that may result from other actions related to the GSEP.

D.5.3.1 AIR QUALITY

Environmental Setting

The air quality setting for the proposed project can be described regionally and locally. The proposed project is located within the eastern portion of Riverside County, within the Mojave Desert Air Basin (MDAB). MDAB is an assemblage of mountain ranges interspersed with long broad valleys, with a dry-hot desert climate. Air quality regulations in the MDAB are provided by the Mojave Desert Air Quality Management District (MDAQMD). The MDAQMD also provides an analysis of compliance with LORS. The affected environment resulting from the proposed CRS/GSEP Project is the same as that for the GSEP described more in detail in Section C.1.4.1 above. Laws, ordinances, regulations and standards (LORS) are described in staff's RSA for the GSEP (CEC 2010j).

Local air quality is based on proximity of sensitive air quality receptors to local air pollution sources (e.g., traffic-congested roadways and intersections). Sensitive air quality receptors include structures that house children, the elderly, and persons with preexisting respiratory or cardiovascular illness (i.e., schools, hospitals, and nursing homes).

Colorado River Substation Expansion

The proposed CRS/GSEP Project site is on a BLM-owned parcel that would be granted for use by SCE. The proposed substation expansion site is located east of the Chuckwalla Dunes area in the county of Riverside. There are no sensitive air quality receptors located in proximity to the proposed substation and interconnection area. As described in the Air Quality section of the RSA, the nearest sensitive receptor locations are the Ironwood and Chuckwalla State Prisons, located approximately six miles west southwest of the substation project site and roughly 2 miles south of where the GSEP gen-tie line would connect with the existing Blythe Energy Project Transmission Line.

Generation Tie Line Connection

Connection of the GSEP tie-line would take place at the CRS. The environmental setting would be the same as for the CRS (described immediately above).

Telecommunication System

GSEP would utilize OPGW on the interconnection gen-tie and would terminate the fiber optics inside the Colorado River Substation. SCE would install the last span of fiber optics between the 220 kV switchrack and the first GSEP transmission line structure north of CRS.

To provide redundancy, a telecom line would also be constructed underground in a 5-inch PVC conduit from the GSEP to the CRS along the GSEP tie-line route. Starting from the GSEP, the line would be within the natural gas line and access road right of way (ROW) until it reaches the existing Blythe Energy Transmission Line (BETL), and from that point, the line would be within the ROW of existing BETL poles until reaching the CRS. Once at the CRS, the line would follow the gen-tie route to the point of interconnection. There are no sensitive receptors adjacent to the telecom line route.

Potential Impacts of Proposed Downstream Upgrades

The potential air pollutant emissions that would be generated by the project have been assessed qualitatively and quantitatively. The project emissions are estimated based on the construction information provided by SCE, the anticipated impacts of emissions have been identified, and general measures to reduce potential impacts are recommended. Subsequent environmental review pursuant to CEQA and NEPA will require a quantitative analysis for all project components and specific mitigation measures would be identified accordingly.

The proposed project components (i.e., substation, generation tie line connection, and telecommunication system) would generate air pollutant emissions, primarily from facilities construction and, to a much lesser degree, from the operation and maintenance of the constructed facilities. Construction activities would generate temporary (short-term) emissions as fugitive dust emissions (particulate matter) from earth-moving activities and as exhaust emissions from the operation of construction equipment and vehicles. Exhaust emissions may include carbon monoxide (CO); ozone (O_3) precursors; nitrogen dioxide (NO_2); sulfur dioxide (SO_2); lead (Pb); and particulate matter, which is subdivided into two classes based on particle size: fine particles (PM2.5) and inhalable particles (PM10). Operation of the proposed CRS/GSEP Project

would generate minor stationary and mobile exhaust emissions from operation and maintenance of the proposed facilities (i.e., substation and fiber optic lines).

The construction emissions for the substation expansion are anticipated to be significant for PM10 if mitigation measures are not implemented. The construction emissions for the gen-tie connection and telecommunication system are not anticipated to be substantial or to exceed MDAQMD CEQA significance thresholds. Project operational emissions are anticipated to be negligible, as the emissions from the constructed substation and installed fiber optic lines would be limited to emergency generators and occasional maintenance.

Since the CRS/GSEP Project facilities would be located away from sensitive air quality receptors, the diesel PM emissions generated from construction equipment and mobile sources are not anticipated to subject sensitive receptors to adverse levels of diesel PM or other emissions.

The following describes the types of activities and emissions associated with each element of the CRS/GSEP Project, and provides the basis and the emission estimates for the conclusions presented above.

Colorado River Substation Expansion

The proposed CRS expansion project site would occupy a 45-acre parcel located approximately 1.5 miles south of Interstate 10. Air quality impacts for the GSEP Project site are included in Section 5.1 of the RSA, and were generally found to be less than significant with implementation of mitigation.

The substation and interconnection would generate air pollutant emissions primarily from facility site construction; minor emissions would be generated from the post-construction operation and maintenance of the constructed substation. The air emissions would consist of exhaust emissions from heavy-duty diesel construction equipment use, diesel and gasoline fueled on-road delivery trucks, and fugitive dust (particulate matter) emissions from construction activities and from vehicle travel on unpaved surfaces. The access road to the site would likely be Wiley Well Road, which is approximately 4.75 miles west of the center of the project site. Five miles of unpaved road distance for each vehicle trip are assumed in the emission estimates. Construction activities would include site grading, facility installation, wiring, and paving. Project emissions from the substation expansion construction compared to the applicable thresholds are presented in **Table 8** below.

Given the number of construction days for each activity by SCE, the construction schedule is developed based on staff's review of other SCE substation/transmission projects, such as El Casco Project and Tehachapi Renewable Transmission Project. The proposed project construction would start in the fourth quarter of 2010 and would occur over 21 months. Different phases of the construction would overlap as necessary during the construction period. The construction equipment and required material provided by SCE are utilized in the Staff emission estimates.

Table 8
CRS Expansion – Maximum Daily and Annual Construction Emissions

	NOx	SOx	CO	VOC	PM10	PM2.5
Maximum Daily Emissions (lbs/day)						
CRS Expansion Project Emissions	72.77	2.37	32.86	10.42	308.52	52.85
Significant Threshold	137	137	548	137	82	82
Threshold Exceeded?	No	No	No	No	Yes	No
Maximum Annual Emissions (ton/year)						
CRS Expansion Project Emissions	5.43	0.01	2.65	0.63	21.96	4.10
Significant Threshold	25	25	100	25	15	15
Threshold Exceeded?	No	No	No	No	Yes	No

Note: Significance of the project impacts is determined using the significance criteria/thresholds that SCE would be expected to use in the subsequent analysis for the Project, which are not the significance criteria/thresholds used by the Energy Commission for power plant significance determination.

The worst case daily emissions would occur during Month 5 for all pollutants, with an exception for SOx which would have its maximum daily emissions during Month 4. During Month 5, fencing and civil phases would overlap. The most number of off road trips generated by equipment vehicles and construction employees occur during Month 5. Also, delivery of 10,000 cubic yards of concrete would be required at the early stage of the civil phase, which would create substantial on road emissions. The worst case annual emissions represent the highest emissions during any consecutive 12 month period. The maximum annual emissions would occur during first twelve consecutive months, Month 1 – Month 12, when grading phase and civil activities dominate the annual emissions.

The worst-case particulate matter emissions would exceed the MDAQMD daily and annual significant thresholds. The long unpaved road distance between Wiley Well Road to the site would result in this PM10 exceedance. Paving the main access road would reduce the construction emissions to less than significant and also would reduce the operating/maintenance emissions.

Generation Tie Line Connection

Connecting the gen-tie line to the CRS would include the installation of primary conductor and overhear ground wire (OHGW), vibration dampeners, weights, spacers, and suspension and dead-end hardware assemblies.

The air emissions would consist of exhaust emissions from heavy-duty diesel construction equipment use, diesel and gasoline fueled on-road delivery trucks, and fugitive dust (particulate matter) emissions from construction activities and from vehicle travel on unpaved road. The gen-tie line connection would be temporary and short-term, approximately 2 days. Due to the nature of short-term construction, the construction emissions would be minimal, lower than the significance thresholds shown in **Table 8** and, therefore would be less than significant.

Telecommunication System

In order to provide monitoring and remote operation capabilities of the electrical element at the Project substation, a telecommunication system is required, which would include line protection, installation of Supervisory Control and Data Acquisition (SCADA) and

telecommunications circuit from the GSEP Substation to the CRS on an optical system utilizing OPGW on the 220 kV gen-tie line. The buried telecom line from the GESP to the CRS would be constructed an already disturbed area such as the access road under or adjacent to the gen-tie line.

Air emissions would consist of exhaust emissions from use of a backhoe, diesel and gasoline fueled on-road trucks, and fugitive dust (particulate matter) emissions from construction activities and from vehicle travel on unpaved road. Based on the expected short construction duration and the minimal number of construction equipment, the construction emissions would be minimal, lower than the significance thresholds shown in **Table 8** and, therefore would be less than significant.

Impact Minimization Measures

The CRS Expansion Project would be required to comply with all MDAQMD rules, including portable equipment rules, which would dictate how the equipment could be operated. Mitigation measures would be implemented in compliance with the MDAQMD Ozone State Implementation Plan to reduce the emissions generated during project construction and operation.

Construction-related activities and emissions at the project site are consistent with activities and emissions encountered at any construction site. Compliance with the provisions of the following necessary construction permits: 1) grading permit; 2) SWPPP requirements (construction site provisions); 3) use permit; and 4) building permits.

Construction phase emissions are generally short-term in duration, considering the life time of the project. Effective and comprehensive control measures would be needed to reduce equipment and fugitive dust emissions to the extent feasible. Staff recommends that the following measures be implemented during construction to mitigate potential impacts to air quality:

- Implement fugitive dust control requirements, including paving the main access road to the CRS/GSEP Project site before primary construction activities begin, watering active construction areas, implementing trackout controls, and applying other activity-specific control measures to reduce fugitive dust emissions during construction.
- Limit the potential offsite impacts from visible dust emissions, by responding to situations when the fugitive dust control measures are not working effectively to control fugitive dust from leaving the construction area.
- Mitigate the PM and NOx emissions from large diesel-fueled construction equipment by using newer cleaner engines and other various control measures such as idle time restrictions, engine maintenance, etc.

With effective and comprehensive control measures such as those recommended in this section, dust and equipment exhaust impacts would be reduced and would be less than significant.

D.5.3.2 BIOLOGICAL RESOURCES

Environmental Setting

Biological surveys have not been conducted for the entire proposed CRS/GSEP interconnection project area. Reconnaissance surveys of the proposed CRS expansion and gen-tie interconnection area were conducted in spring 2010 in support of the reasonably foreseeable development scenario for the Blythe Solar Energy Project (TTEC 2010o, Attachment A). The western portion of the proposed telecommunications system would be co-located with the GSEP natural gas pipeline and access road; detailed surveys of these linear features were conducted and the biological resources setting is described in Section C.2.4.1 of the GSEP RSA. In June 2010, the applicant provided updated biological survey information of the GSEP, including this western portion of the telecommunication route (TTEC 2010q). The environmental setting of the remainder of the telecommunication route between its intersection with the BETL 230-kV transmission line to the CRS, is described based on a review of existing information including the FEIS/FEIR for the Desert Southwest Transmission Project (BLM and IID 2005), which would follow the telecom route along the existing Blythe Energy Project 230-kV transmission line.

Vegetation Communities

CRS Expansion and Gen-Tie Connection

Staff has little project-specific information regarding the habitat types that would be permanently or temporarily impacted by the CRS expansion and gen-tie connection, but infers that construction would occur within sand dune habitat. The basis for this inference is Figure DR-BIO-51-2 from the Data Response submitted for the Blythe Project (AECOM 2010e), which shows the approximate location of the proposed Colorado River Substation and depicts it as being entirely within stabilized and partially stabilized sand dune. Supporting staff's inference that the substation expansion would be in sand dunes is the Blythe Applicant's submittal which included the 2010 preliminary survey results from the Blythe Project (TTEC 2010o, Attachment A). This submittal showed numerous records for species that occur on sand dune habitat (for example Mojave fringe-toed lizard and ribbed cryptantha) in and around the proposed CRS location.

Stabilized and partially stabilized desert dunes are accumulations in the desert which are stabilized or partially stabilized by evergreen and/or deciduous shrubs and scattered, low grasses. These dunes typically occur lower than active dune systems and retain water just below the sand surface which allows deep-rooted, perennial vegetation to survive during longer drought periods. The dominant plant species associated with this community include four-wing saltbush (*Atriplex canescens*), desert croton (*Croton californicus*), and Colorado desert buckwheat (*Eriogonum deserticola*).

Staff does not have information about the presence of ephemeral washes, desert dry wash woodland and other waters of the state in the proposed substation expansion and gen-tie connection area. Although none were observed based on preliminary review of topographic maps and aerial imagery, field delineations are needed to substantiate this.

Telecommunications System

Habitat types within the telecommunications route include Sonoran creosote bush scrub, stabilized and partially stabilized desert dunes, playa and sand drift over playa.

Sonoran creosote bush scrub occurs on well-drained, secondary soils of slopes, fans, and valleys and is the basic creosote scrub community of the Colorado Desert (Holland 1986). Within this community, soils are generally sandy-loams with scattered areas of fine gravel. The dominant plant species are creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), white ratany (*Krameria grayi*), and cheesebush (*Hymenoclea salsola*).

Playa and sand drifts over playa occurs in close association with stabilized and partially stabilized desert dunes, and are characterized by intermittent, shallow sand drift deposits along the margins of playa. Playas and sand drifts over playas provide food and foraging opportunities for many species of wildlife and also provide habitat for several common and special-status plant species.

Special Status Species

Special-status species are plant and wildlife species that have been afforded special recognition by federal, state, or local resource agencies or organizations. Listed and special-status species are of relatively limited distribution and typically require unique habitat conditions. Special-status species are defined as meeting one or more of the following criteria:

- Listed as threatened or endangered or candidates for future listing as threatened or endangered under CESA or FESA;
- Protected under other regulations (e.g. Migratory Bird Treaty Act);
- Listed as species of concern by the California Department of Fish and Game (CDFG);
- BLM sensitive species
- A plant species considered by the California Native Plant Society (CNPS) to be “rare, threatened, or endangered in California” (CNPS List 1A, 1B, and 2) as well as CNPS List 3 and 4 plant species;
- A plant listed as rare under the California Native Plant Protection Act;
- Considered a locally significant species, that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region or is so designated in local or regional plans, policies, or ordinances; or
- Any other species receiving consideration during environmental review under CEQA.

Table 9 lists special-status species that are known to occur or could potentially occur in the Project area and vicinity. Special-status species (or their sign) observed during field surveys of the CRS expansion area (TTEC 2010o, Attachment A) or GSEP linears (TTEC 2010q) are indicated by **bold-face type**. As described above, surveys have not

been conducted for the proposed telecom route between its intersection with the BEPTL and the CRS.

Table 8. Special-Status Species Potentially Occurring in the Project Area

PLANTS		
Common Name	**Scientific Name**	**Status State/Fed/CNPS/BLM/ Global Rank/State Rank**
Chaparral sand verbena	*Abronia villosa* var. *aurita*	__/__/1B.1/__/G5T3T4/S2.1
Angel trumpets	*Acleisanthes longiflora*	__/__/2.3/__/G5/S1.3
Desert sand parsley	*Ammoselinum giganteum*	__/__/2.3/__/G2G3/SH
Small-flowered androstephium	*Androstephium breviflorum*	__/__/2.2/__/G5/S2
Harwood's milk-vetch	***Astragalus insularis* var. *harwoodii***	**__/__/2.2/__/G5T3/S2.2?**
Coachella Valley milk-vetch	*Astragalus lentiginosus* var. *coachellae*	__/FE/1B.2./S/G5T2/S2.1
California ayenia	*Ayenia compacta*	SE/__/2.3/__/G4/S3.3
Pink fairy duster	*Calliandra eriophylla*	__/__/2.3/__/G5/S2.3
Sand evening-primrose	*Camissonia arenaria*	__/__/2.2/__/G4?/S2
Crucifixion thorn	*Castela emoryi*	__/__/2.3/__/G3/S2.2
Abram's spurge	*Chamaesyce abramsiana*	__/__/2.2/__/G4/S1.2
Arizona spurge	*Chamaesyce arizonica*	SR/__/2.3/__/G5/S1.3
Flat-seeded spurge	*Chamaesyce platysperma*	__/__/1B.2/S/G3/S1.2?
Las Animas colubrina	*Colubrina californica*	__/__/2.3/__/G4/S2S3.3
Spiny abrojo/Bitter snakeweed	*Condalia globosa* var. *pubescens*	__/__/4.2/__/G5T3T4/S3.2
Foxtail cactus	*Coryphantha alversonii*	__/__/4.3/__/G3/S3.2
Ribbed cryptantha	***Cryptantha costata***	**__/__/4.3/__/G4G5/S3.3**
Winged cryptantha	***Cryptantha holoptera***	**__/__/4.3/__/G3G4/S3?**
Wiggins' cholla	***Cylindropuntia wigginsii (syn=Opuntia wigginsii)***	**__/__/3.3/__/G3?Q/S1.2?**
Utah vining milkweed	***Cynanchum utahense***	**__/__/4.2/__/G4/S3.2**
Glandular ditaxis	*Ditaxis claryana*	__/__/2.2/__/G4G5/S1S2
California ditaxis	*Ditaxis serrata* var. *californica*	__/__/3.2/__/G5T2T3/S2.2
Harwood's eriastrum	***Eriastrum harwoodii***	**__/__/1B.2/BLM/G2/S2**
California satintail	*Imperata brevifolia*	__/__/2.1__/G2/S2.1
Cottontop cactus	*Echinocactus polycephalus* var. *polycephalus*	__/__/__/__/__/__
Pink velvet mallow	*Horsfordia alata*	__/__/4.3/__/G4/S3.3
Bitter hymenoxys	*Hymenoxys odorata*	__/__/2/__/G5/S2
Spearleaf	*Matelea parvifolia*	__/__/2.3/__/G5?/S2.2
Argus blazing star[3]	*Mentzelia puberula*	__/__/__/__/__/__
Slender woolly-heads	*Nemacaulis denudata* var. *gracilis*	__/__/2.2/__/G3G4T3?/S2S3
White-margined penstemon	*Penstemon albomarginatus*	__/_ /1B.1/S/G2/S1
Lobed cherry	*Physalis lobata*	__/__/2.3/__/G5/S1.3
Desert portulaca	*Portulaca halimoides*	__/__/4.2/__/G5/S3
Desert unicorn plant	***Proboscidea althaeifolia***	**__/__/4.3/__/G5/S3.3**
Orocopia sage	*Salvia greatae*	__/__/1B.3./S/G2/S2.2
Desert spikemoss	*Selaginella eremophila*	__/__/2.2./__/G4/S2.2?

[3] Proposed new addition to the CNPS Inventory (Andre, pers. comm.)

Cove's cassia	*Senna covesii*	__/__/2.2/__/G5?/S2.2
Mesquite nest straw	*Stylocline sonorensis*	__/__/1A/__/G3G5/SX
Dwarf germander	*Teucrium cubense* ssp. *depressum*	__/__/2.2/__/G4G5T3T4/S2
Jackass clover	*Wislizenia refracta* ssp. *refracta*	__/__/2.2/__/G5T5?/S1.2?
Palmer's jackass clover[4]	*Wislizenia refracta* ssp. *palmeri*	__/__/Proposed 1B/__/__/__
Atriplex sp. nov. ("Palen Lake atriplex")	*Atriplex* sp. nov J. Andre	__/__/Proposed ?/__/__/__
WILDLIFE		
Common Name	**Scientific Name**	**Status State/Federal**
Reptiles/Amphibians		
Desert tortoise	*Gopherus agassizii*	ST/FT
Couch's spadefoot toad	*Scaphiopus couchii*	CSC/__/BLM Sensitive
Mojave fringe-toed lizard	***Uma scoparia***	**CSC/BLM Sensitive**
Desert rosy boa	*Charina (Lichanura) trivirgata*	__/__
Chuckwalla	*Sauromalus obesus*	__/__
Birds		
Western burrowing owl	*Athene cunicularia hypugaea*	CSC/BCC/BLM Sensitive
Golden eagle	*Aquila chrysaetos*	CFP/__/BLM Sensitive
Short-eared owl	*Asio flammeus*	CSC
Ferruginous hawk	***Buteo regalis***	**WL/BLM Sensitive**
Swainson's hawk	***Buteo swainsoni***	**ST**
Prairie falcon	*Falco mexicanus*	WL
American peregrine falcon	*Falco peregrinus anatum*	SFP
Vaux's swift	*Chaetura vauxi*	CSC
Mountain plover	*Charadrius montanus*	CSC/__/BLM Sensitive
Northern harrier	***Circus cyaneus***	**CSC**
Gilded flicker	*Colaptes chrysoides*	SE
Yellow warbler	*Dendroica petechia sonorana*	CSC
California horned lark	*Eremophila alpestris actia*	WL
Yellow-breasted chat	*Icteria virens*	CSC
Loggerhead shrike	***Lanius ludovicianus***	**CSC/BCC**
Gila woodpecker	*Melanerpes uropygialis*	SE
Black-tailed gnatcatcher	*Polioptila melanura*	__/__
Purple martin	*Progne subis*	CSC
Vermilion flycatcher	*Pyrocephalus rubinus*	CSC
Brewer's sparrow	*Spizella breweri*	BCC
Bendire's thrasher	*Toxostoma bendirei*	CSC/__/BLM Sensitive
Crissal thrasher	*Toxostoma crissale*	CSC
Le Conte's thrasher	*Toxostoma lecontei*	WL/BCC/Sensitive
Mammals		
Pallid bat	*Antrozous pallidus*	CSC/__ /BLM Sensitive
Townsend's big-eared bat	*Corynorhinus townsendii*	CSC/__/BLM Sensitive
Spotted bat	*Euderma maculatum*	CSC/__/ BLM Sensitive
Western mastiff bat	*Eumops perotis californicus*	CSC/__/ BLM Sensitive

[4] Proposed new addition to the CNPS Inventory (Silverman, pers comm.)

Hoary bat	*Lasiurus cinereus*	__/__
California leaf-nosed bat	*Macrotus californicus*	CSC/__/ BLM Sensitive
Arizona myotis	*Myotis occultus*	CSC
Cave myotis	*Myotis velifer*	CSC/__/ BLM Sensitive
Yuma myotis	*Myotis yumanensis*	__/__/BLM Sensitive
Colorado Valley woodrat	*Neotoma albigula venusta*	__/__
Pocket free-tailed bat	*Nyctinomops femorosaccus*	CSC
Big free-tailed bat	*Nyctinomops macrotis*	CSC
Burro deer	***Odocoileus hemionus eremicus***	__/__/__
Nelson's bighorn sheep	*Ovis canadensis nelson*	__/BLM Sensitive
Yuma mountain lion	*Puma concolor browni*	CSC
American badger	***Taxidea taxus***	**CSC**
Desert kit fox	***Vulpes macrotis arsipus***	__/__

(Sources: GSEP RSA; TTEC 2010o; TTEC 2010q)

***Status Legend (State/Fed/CNPS/BLM/Global Rank/State Rank)**:
FE = Federally listed Endangered; **FT** = Federally listed Threatened; **BCC** = USFWS Bird of Conservation Concern; **SE** = State listed Endangered**; ST** = State listed Threatened; **CSC** = California Species of Concern; **SFP** = State Fully Protected; **CCR** = Protected under CDFG Code Title 14, CCR §460; **WL** = State Watch List; **List 1B** = Rare or Endangered in California and elsewhere; **List 2** = Rare, threatened, or endangered in California but more common elsewhere; **List 4** = Limited distribution – a watch list; **.1** = Seriously threatened in California (high degree/immediacy of threat); **.2** = Fairly threatened in California (moderate degree/immediacy of threat)

Global Rank/State Rank
G1 or S1 = Critically imperiled; Less than 6 viable element occurrences (EOs) OR less than 1,000 individuals; G2 or S2 = Imperiled; 6-20 EOs OR 1,000-3,000 individuals; G3 or S3 = Rare, uncommon or threatened, but not immediately imperiled; 21-100 EOs OR 3,000-10,000 individuals; G4 or S4 = Not rare and apparently secure, but with cause for long-term concern; G5 or S5= Demonstrably widespread, abundant, and secure. **Threat Rank** .1 = very threatened; .2 = threatened; .3 = no current threats known

Surveys conducted of the GSEP linears included the proposed telecom line between the GSEP site and its intersection with the BETL (TTEC 2010q). Special status plants observed during fall 2009 and spring 2010 surveys include: Harwood's milkvetch, ribbed cryptantha, and desert unicorn plant. Special status wildlife observed include: Mojave fringe-toed lizard, desert kit fox (active complex), Swainson's hawk, ferruginous hawk, northern harrier, loggerhead shrike. Additionally, ponded features that could provide suitable breeding habitat for Couch's spadefoot toad occur along the western portion of the telecommunication line route south of Interstate 10 and south of the telecommunication route near the CRS.

Surveys conducted of the CRS substation expansion area also included the proposed gen-tie connection area (TTEC 2010o, Attachment A). Special status plants observed during spring 2010 surveys include: Harwood's milkvetch, Harwood's eriastrum, ribbed cryptantha, and winged cryptantha. Special status wildlife observed include: many Mojave fringe-toed lizards, desert kit fox, Swainson's hawk, loggerhead shrike. Additionally desert tortoise bone fragments were observed within 0.75 to one mile of the CRS expansion area; no live tortoise or recent sign were observed. The CRS expansion area may also provide suitable foraging habitat for raptors, including golden eagle and Swainson's hawk.

Impacts

The proposed CRS expansion is considered in the **Biological Resources** section of the RSA as a reasonably foreseeable development scenario, and a screening-level analysis of potential impacts to biological resources is included in the RSA. The telecommunication system was fully analyzed by staff in the **Biological Resources** section of the RSA as a part of the proposed GSEP. Excerpts from the **Biological Resources** section of the RSA (Section 6.2.4.2), which present staff's analysis of impacts from the CRS expansion and telecommunications system, are presented below.

Impacts to biological resources resulting from construction and operation of the gen-tie line, including recent revisions which would require six additional poles, are fully analyzed in the **Biological Resources** section of the RSA (see Section C.2.4.2). However, staff's analysis in the RSA does not include the gen-tie connection, which requires installation of one additional transmission line support structure and conductor between this structure and the CRS 220-kV switchrack. An original analysis of potential impacts from the gen-tie connection is provided below.

CRS Expansion

Based on the information from the Blythe Project 2010 surveys (TTEC 2010o, Attachment A, Figure 2 - Preliminary Results Botany Rare Plants Spring 2010 Surveys, and Figure 4 - Incidental Wildlife Observations Spring 2010 Surveys) staff has concluded that Mojave fringe-toed lizards and a number of other sensitive sand dune-dependent species are likely to be directly impacted by expansion of the Colorado River Substation. Many Mojave fringe-toed lizards were detected in and near the proposed CRS, as well as numerous rare plants, including Harwood's eriastrum, Harwood's milk-vetch, winged cryptantha and ribbed cryptantha.

Harwood's eriastrum, a California endemic and BLM Sensitive species, has a global distribution restricted to the southeast corner of California, and it is known from only 14 documented locations. As described above in the subsection on impacts to special-status plants, direct or indirect impacts to Harwood's eriastrum or Harwood's milk-vetch would be significant. Late summer/fall botanical surveys might also reveal the presence of additional sensitive plant species in the vicinity of the proposed substation expansion. BLM requests 100 percent avoidance for BLM sensitive species such as Harwood's eriastrum (Lund pers. comm.).

Even if the substation expansion avoided direct impacts to these sensitive sand dune species, indirect impacts are also likely to occur. Alterations in drainages could adversely affect special-status plant populations that occur downstream of the project area. Other indirect effects include the spread of the non-native Sahara mustard and other non-native invasive species, which degrade sand dune habitat by prematurely stabilizing dunes. Transmission line maintenance activities and an increase in OHV use from the construction of roads into previously inaccessible areas could also adversely affect sand dune dependent plant and animal species.

No desert tortoise were detected in or within the one-mile buffer around the proposed substation during the 2010 surveys (TTEC 2010o), but given the proximity of good

habitat in the immediate vicinity of the proposed substation, desert tortoise could occur in or near the proposed substation expansion and could be directly or indirectly impacted. Transmission line maintenance activities and an increase in OHV use from the construction of roads into previously inaccessible areas could result in increased disturbance from human intrusions and increased risk of mortality from vehicle strikes and crushing of burrows. Construction activities and addition of new perching structures such as transmission poles and lines could result in increased raven numbers, and hence an increase in desert tortoise predation. Road construction could also increase the opportunities for non-native invasive plant species, with adverse effects to native plant and wildlife communities. Nesting birds, badger, kit fox, and burrowing owls could also be directly or indirectly affected by construction and operation of the expanded substation. Staff does not have information about the presence of ephemeral washes, desert dry wash woodland and other waters of the state in the proposed substation expansion area. The proposed expansion and associated drainage modifications could result in direct and indirect impacts to state waters.

Gen-Tie Connection

Impacts to biological resources from construction of an additional transmission support structure are similar to impacts resulting from expansion of the substation, as described above, and construction of the gen-tie, as described in Section C.2.4.2 of the RSA. Sand dune habitat would be temporarily and permanently impacted by construction of the gen-tie connection. In addition, special-status wildlife species (e.g., Mojave fringe-toed lizard, desert tortoise, nesting or migratory birds, American badger, desert kit fox, burrowing owl) and plant species (e.g., Harwood's eriastrum, Harwood's milk-vetch, winged cryptantha and ribbed cryptantha) could be crushed or otherwise directly impacted by construction activities. It is unknown whether state waters occur within the proposed gen-tie connection area.

Although the transmission support structure and construction equipment could possibly be sited to avoid direct impacts to special-status species and sand dune habitat, indirect impacts would likely occur. Indirect impacts may include increased predation by ravens, habitat modification and degradation, proliferation of non-native invasive plant species.

Telecommunications System

The telecommunication line would be built within the disturbed linear corridor and would be adjacent to the gen-tie transmission line. The GSEP Applicant has indicated that the creation of the telecommunication line (either above ground or underground) would not create additional impacts other than the physical area needed for the permanent pole pads, and that these impacts would be calculated and quantified in a subsequent document (TTEC 2010o). Staff would need additional information, including a detailed project description and figures showing the location of the proposed underground line, to reach conclusions about the extent of impacts to biological resources from construction and operation of the telecommunications line. However, staff agrees that these impacts are likely to be relatively small, and that staff's proposed conditions of certification would likely be sufficient to reduce impacts to biological resources to less than significant levels.

Cumulative Impacts

Cumulative impacts resulting from the proposed CRS/GSEP interconnection project would be similar to the GSEP Project albeit at a much reduced level; refer to Section D.2.9 of the RSA. In the GSEP RSA, staff concluded that implementation proposed conditions of certification would mitigate biological resource impacts to biological resources below the level of significance, thereby eliminating the projects contribution to cumulatively considerable impacts. It is anticipated that with implementation of similar measures, the CRS/GSEP interconnection project could also adequately mitigate potential cumulative effects.

Impact Minimization Measures

The proposed CRS/GSEP interconnection project, especially expansion of the Colorado River Substation, has the potential to result in significant direct, indirect and cumulative impacts to biological resources. Staff recommends implementation of measures similar to the following conditions of certification presented in the GSEP RSA:

- General impact avoidance and minimization measures (**BIO-8**). Confine work to delineated areas, control standing water, adhere to speed limits, dispose of trash, etc.
- Desert tortoise clearance surveys and fencing (**BIO-9**). Conduct clearance surveys and install exclusion fencing ensure no desert tortoises are within the project area during construction.
- Desert tortoise translocation plan (**BIO-10** and **BIO-11**). Implement a USFWS- and CDFG-approved translocation plan to remove desert tortoises found within the project area.
- Desert tortoise compensatory mitigation (**BIO-12**). Acquire compensatory habitat to support desert tortoises.
- Raven management plan (**BIO-13**). Minimize raven subsidies, implement a project Raven Plan, contribute payment toward the USFWS-coordinated regional raven management effort.
- Weed management plan (**BIO-14**). Inspect and clean construction equipment, eradicate and monitor weed populations, quickly restore temporarily disturbed areas.
- Pre-construction nest surveys (**BIO-15**). Conduct pre-construction nest surveys and implement impact avoidance measures including establishing no-disturbance buffers around nests.
- American badger and desert kit fox avoidance and minimization measures (**BIO-17**). Conduct pre-construction clearance surveys and passively relocate individuals.
- Burrowing owl impact avoidance and minimization measures (**BIO-18**). Conduct pre-construction clearance surveys, passive relocation, burrow construction; acquire compensatory habitat;
- Special-status plant impacts avoidance and minimization measures (**BIO-19**). Conduct pre-construction surveys, flag and avoid plant populations, control herbicide drift, implement erosion control measures, acquire compensatory habitat to mitigate for unavoidable impacts.

- Sand-dune community/Mojave fringe-toed lizard mitigation (**BIO-20**). Acquire compensatory habitat for impacts, including loss of sand dune habitat.
- Mitigation for impacts to state waters (**BIO-22**). Acquire and protect off-site waters of the state; implement best management practices.
- Revegetation of temporarily disturbed areas (**BIO-24**). Restore temporarily disturbed areas to pre-construction conditions and conduct monitoring to ensure effectiveness.
- Couch's spadefoot toad mitigation (**BIO-27**). Limit noise and vibration; prepare and implement a protection and mitigation plan, create and protect suitable breeding ponds.
- Golden eagle inventory and monitoring (**BIO-28**). Conduct golden eagle inventory and monitoring and develop and implement a territory-specific management plan to avoid disturbance.

Provision of qualified personnel (Designated Biologist and Biological Monitors; e.g., **BIO-1** through **BIO-5**), worker training (e.g., **BIO-6**), and monitoring and reporting (e.g., **BIO-7**) are recommended to ensure that any impact avoidance, minimization, and mitigation measures, such as those listed above, are effectively implemented.

As stated in the **Biological Resources** section of the GSEP RSA, implementation of the measures in these conditions of certification would require site-specific information about the location of proposed project features in relation to sensitive biological resources. Staff does not currently have that project-specific information and therefore cannot address the feasibility of implementing effective avoidance measures as a means of reducing impacts below the level of significance.

D.5.3.3 CULTURAL RESOURCES

This cultural resources analysis is based on applicant-provided cultural resource information for the GSEP (Farmer et al. 2009, GSEP 2009a, TTEC 2010p). Site-specific information for the CRS/GSEP Project area was not available east of the intersection of Wiley Well Road and the existing DPV 500 kV line or for the CRS expansion. The CRS/GSEP Project (and potentially resultant impacts to cultural resources) would be subject to an independent, site-specific analysis conducted by the CPUC and BLM, pursuant to CEQA and NEPA respectively.

Environmental Setting

The environmental setting for cultural resources is common to the proposed CRS expansion, gen-tie connection, and telecommunication system areas. Further, the telecommunication system would be co-located with the GSEP natural gas pipeline and access road; the prehistoric and historic setting of these linear features is described in detail in Section C.3 of the GSEP RSA.

Regional Setting

The proposed project area is located in Chuckwalla Valley, along the southeast edge of Ford Dry Lake. This area is part of the Mojave Desert, a sub-region of the Lower Sonoran Life Zone. The project vicinity has two main vegetation types: Sonoran creosote bush scrub and stabilized and partially stabilized sand dunes (GSEP 2009a, p.

5.3-1). Humans have inhabited this region for the last 10,000 years, with the population ebbing and flowing primarily in response to several climatic shifts. These shifts have resulted in variable availability of vital resources, and that variability has influenced the scope and scale of human use of the vicinity of the project site. During cool, wet times the regional lakes filled and the necessary resources for human occupation were available. During warm, dry times the lakes dried and the region became a difficult place to live and traverse.

Eight successive temporal periods, each with distinctive cultural patterns, have been defined for the prehistoric Colorado Desert. They are: Paleo-Indian Period (about 10,000–8000 BC), Lake Mojave Complex (8000–6000 BC), Pinto Complex (8000–3000 BC), Deadman Lake Complex (7500–5200 BC), Possible Abandonment (3000–2000 BC), Gypsum Complex (2000 BC–200 AD), Rose Spring Complex (200 AD–1000 AD), and the Late Prehistoric Period (1000 AD–1700 AD). Within the Chuckwalla Valley, prehistoric sites are clustered around springs, wells, and other obvious important features/resources. Sites include villages with cemeteries, occupation sites with and without pottery, large and small concentrations of ceramic sherds and flaked stone tools, rock art sites, rock shelters with perishable items, rock rings/stone circles, geoglyphs, and cleared areas, a vast network of trails, markers and shrines, and quarry sites.

The Chuckwalla Valley does not appear to be associated clearly with any historic Native American group (Singer 1984, pp. 36-38). However, seven groups - Chemehuevi, Serrano, Cahuilla, Mojave, Quechan, Maricopa, and Halchidhoma - claim territory nearby or describe this region in their oral history. The trails, rock art, geoglyphs and other prehistoric features are still of religious importance to many of these Native American groups.

The major historical themes for the Mojave Desert region and GSEP vicinity are the establishment of transportation routes, water access, mineral exploitation, and military uses. Mineral deposits identified in the region include gold, silver, fluorite, manganese, copper, gypsum, and uranium. Most mining in the region took place in the 1880s and 1890s, but gypsum mines in the McCoy Mountains were also profitable from 1925 to the 1960s. Evidence of mining activity in the region primarily takes the form of access roads, pit mines, tailing piles, and refuse.

Transportation is also an important theme for the region. One of the earliest major trans-desert trail/wagon routes established in the vicinity of the GSEP was known as Frink's Route. Based on a prehistoric Native American trail, Frink's Route for wagons was established prior to 1856, connecting southern California supply points with mines and outposts along the Colorado River. Frink's route appears to have passed south of the GSEP site footprint. Automobile travel across and within the Colorado Desert area first developed using existing wagon roads such as Fink's Route. The Mecca-Blythe-Ehrenberg route approximates the current Interstate 10 route. Travelers along these routes relied on natural water sources such as McCoy Spring and wells excavated by wagon road users. Among the early known wells near the GSEP site footprint and linear facilities corridor include the Hopkins Well, Wiley's Well, and the Ford Well, which appear on the 1920 USGS Water Supply Paper Map, south of the GSEP limits.

Military uses of the region are primarily associated with Gen. Patton's World War II Desert Training Center/California-Arizona Maneuver Area (DTC/C-AMA), which was in operation from 1942-1944. The area was chosen by Gen. George S. Patton, Jr. to prepare troops for the harsh conditions and environment of combat for the North Africa Campaign. At 12,000,000 acres, the DTC/C-AMA was the largest-ever military training center, stretching from west of Pomona, California, to Yuma, Arizona, and north into Nevada. The valley bordered by the Palen, Little Maria, and McCoy Mountains is considered one of the most extensive maneuver areas in the DTC/C-AMA. The remains of the DTC/C-AMA areas consist of rock features, faint roads, structural features, concertina wire, tank tracks, footprints of runway and landing strips, foxholes and bivouacs, concrete defensive positions, refuse, and trails.

Existing Resources

The information about existing cultural resources provided for the CRS/GSEP analysis was spotty. No site specific information was provided for the CRS expansion or the gen-tie connection. The telecom line, both the poles and the trenching for the redundant line, are expected to follow the GSEP linear corridor. Detailed cultural resources information was provided for the linear corridor by the GSEP Applicant between the site footprint and the intersection of Wiley Well Road and the existing DPV 500 kV line. No cultural resources information was provided for the linear corridor east of this intersection.

Additional cultural resources surveys and analyses covering the proposed CRS expansion project area would be conducted by the CPUC and BLM as part of their compliance with CEQA, NEPA, and Section 106 of the National Historic Preservation Act (NHPA). If these surveys identify new resources that are more than 45 years old, and might be affected by the project, they would be evaluated for eligibility for listing on the California Register of Historical Resources (CRHR) and the National Register of Historic Places (NRHP). The BLM would also consult with local Native American groups regarding impacts and potential mitigation for the proposed project. The results of these negotiations would be formalized in a Programmatic Agreement (PA), as required by Section 106 of the NHPA, and included in BLM's environmental document.

The archaeologists for the GSEP Applicant reviewed a number of resources during their background inventory research, but their primary information source was a literature search conducted by the Eastern Information Center (EIC) of the California Historical Resources Information System (CHRIS), at the Department of Anthropology, University of California, Riverside (Farmer et al. 2009). This search covered the areas proposed for the main project components and the linear facilities corridor with a 1.5-mile buffer. Thirty previous cultural resources investigations were identified within the search area, seven of which crossed the GSEP proposed linear alignment. These previous surveys were associated with fiber optic lines, geothermal resources, transmission lines, highway improvements, and gas line installation. Interestingly this review did not include the archaeological technical reports used for three most substantive reviews of the region: the Desert Southwest Transmission Line Final EIS/EIR (2005), the Devers–Palo Verde No. 2 Transmission Line Project Final EIS/EIR (CPUC 2006), or the Blythe Energy Project Transmission Line Energy Commission Staff Assessment and its revisions (CEC 2006).

To facilitate the environmental review of their projects, applicants have conducted intensive pedestrian surveys to identify previously unrecorded cultural resources; these surveys include areas in or near the GSEP site footprint and linear facilities corridor. Overall, previous projects and the cultural resources surveys of the GSEP Applicant have identified a total of 538 cultural resources within the GSEP site footprint, linear corridor and in the near vicinity. These resources include 362 archaeological sites, 177 archaeological isolates, and 2 linear built-environment resources. Of the 362 archaeological sites, 18 are in the GSEP vicinity but are not expected to be impacted by the CRS/GSEP Project. In addition, 52 of these resources have been avoided by NextEra through changes in the size and shape of the GSEP facility footprint, as well as the route of the linear corridor. The remaining 295 resources would be subject to either direct or indirect impacts from GSEP. Forty-three resources—24 within the site footprint and 19 within the linear corridor—would be subject to direct impacts. At least 248 additional ethnographic resources would be subject to indirect impacts.

In general, the previous research in the Chuckwalla Valley suggests that prehistoric archaeological sites are typically located near water (specifically, near springs), on terraces near the shore of the dry lake beds, and in areas where natural resources were utilized. Prehistoric site types in the GSEP site footprint and vicinity include rock shelters, petroglyphs, activity areas, artifact scatters, pot drops, temporary camps, gathering areas, sacred areas, trails, and isolated finds. Historical archaeological sites in the region are primarily associated with transportation, DTC/C-AMA and Desert Strike military maneuvers, mining, and ranching. Historical archaeological site types for the area include road segments, wells, refuse scatters with domestic and/or military discards, tank tracks, and other isolates.

Staff has grouped sites associated with prehistoric trails and those associated with historic military maneuvers into two groups which staff has defined as cultural landscapes.

Cultural Landscapes

A cultural landscape consists of “geographic area, including both natural and cultural resources, associated with a historic event, activity or person” (NPS 1996). Cultural landscapes can be determined eligible and nominated for inclusion on the NRHP as either sites or districts. As such, these landscapes can be contiguous or noncontiguous (Evans et al. 2001).

Staff has proposed the Prehistoric Trails Network Cultural Landscape (PTNCL), which is a noncontiguous cultural landscape (historic district) that incorporates prehistoric archaeological sites associated with the Halchidhoma Trail (CA-Riv-0053T). This landscape consists of important destinations in the Colorado Desert near Blythe, California, the network of trails that tie them together, and the features and sites associated with the trails. Native American groups in the Mojave and Colorado Deserts consistently accord mythological importance to springs, petroglyph sites, and particularly trail systems. Trails across the desert mark the locations of travels of ancestral groups as they migrated to the confluence of the Gila and Colorado Rivers. Trails also facilitate dream travel to these places and the times when events mentioned in story and song occurred (Cleland 2005, p. 132).

The particular trail that forms the connecting link for this cultural landscape, the Halchidhoma Trail (CA-Riv-0053T), is well known from multiple historical and ethnographic sources. It was an essential trade, transportation, and ritual route for Native American peoples and early European visitors in the Colorado Desert during prehistoric and historic times. This route was an essential connection between the Pacific Coast and the Southwestern deserts of Arizona and New Mexico. As such, staff considers the resources that make up the PTNCL to be significant under NRHP Criterion A (CRHR Criteria 1), for their ties to important events in American history. These sites are also considered register-eligible under Criterion D/4 for their ability to yield information important in history and prehistory. As both ethnographic and archaeological resources, PTNCL sites are subject to both direct in and indirect project impacts. Indirect impacts include the visual degredation of the historical integrity of a resource through the construction of the proposed GSEP and its associated downstream improvements.

Staff has also proposed the creation of the Desert Training Center California-Arizona Maneuver Area (DTC/C-AMA) Cultural Landscape (DTCCL) a contiguous cultural landscape (historic district) that incorporates historical archaeological sites associated with General Patton's Desert Training Center (Bischoff 2000). Energy Commission staff recommends that DTCCL is eligible for listing on the NRHP under Criterion D (CRHR Criterion 4). The DTC/C-AMA was the largest and the only such military training facility in American military history. The training that took place here undoubtedly helped to win World War II. Most property types associated with the DTC/C-AMA, across the full extent of the resource, exist today as archaeological resources, such as refuse deposits, tank tracks, foxholes, and bivouacs. These sites would be considered primarily eligible under NRHP Criterion D (CRHR Criterion 4) for their ability to yield information important in history.

Staff has identified contributors to these landscapes beyond the boundaries of a single project. The PTNCL has 6 potential contributors and the DTCCL has 10 potential contributors within the GSEP linear corridor. Staff has also identified contributors within the Blythe Solar Power Project and the Palen Solar Power Project site foot prints and linear corridors. As many contributing elements to both of these landscapes are often considered not to be significant in their own right, staff expects that previously identified cultural resources will need to be re-evaluated.

CRS Expansion

The proposed CRS expansion consists of the already permitted 45 acre substation, supplemented by an additional 45 acres. Staff was not provided any cultural resources information regarding the CRS or the proposed expansion. However, the original substation was evaluated in Appendix B of the Energy Commission Revised Staff Assessment (RSA) for the Blythe Energy Project Transmission Line (BEPTL). In this document the substation is referred to as the Desert Southwest Transmission Project Midpoint Substation Option (DSWTP MSO). Approximately 41 acres of the total 90 acres (original footprint plus expansion footprint) was examined by archaeologists on February 21-22, 2006. No cultural resources were identified during this pedestrian survey. A CHRIS records search conducted at the same time found no previously recorded sites within or nearby the proposed substation location (CEC 2006,App. B, pp.8-9). The BEPTL RSA/DEA further reports that no ethnographic resources, or

Traditional Cultural Properties (TCPs), whose historical integrity could be visually degraded by the proposed project are present nearby.

Future cultural resources surveys and analyses conducted by the CPUC and BLM as part of their compliance with CEQA, NEPA, and Section 106 of the National Historic Preservation Act (NHPA) would need to address potential impacts to cultural resources in the unsurveyed 45 acres, identify impacts to possible TCPs, and identify contributors to the two new cultural landscapes.

Gen-Tie Connection

Information provided above, including the survey data for the CRS original footprint would be applicable to the small area of land comprising the gen-tie location area.

The proposed gen-tie connection would consist of six additional towers to the west and north of the proposed CRS footprint. Staff was not provided with any cultural resources information for this area. Future cultural resources surveys and analyses conducted by the CPUC and BLM will need to address potential impacts to cultural resources in the unsurveyed gen-tie area, identify impacts to possible TCPs, and identify contributors to the two new cultural landscapes.

Telecommunications System

The proposed telecommunication system would consist of a fiber-optic line strung along the transmission towers, and a redundant buried line. Both lines would extend along the full length of the GSEP linear corridor, from the proposed site footprint to the proposed CRS footprint. The telecom trench would likely be added to the linear corridor utility trench, whose cultural resource impacts and proposed mitigation for the western portion are discussed in detail in the GSEP RSA. Based on the RSA, staff concludes that 19 cultural resources would be directly impacted by the western portion of the GSEP linear corridor. Nine of these resources are prehistoric archaeological sites including two temporary camps, three lithic scatters, three artifact scatters, and one ceramic scatter. Ten of these resources are World War II era historic resources including eight refuse scatters, an alignment of metal stakes, and a cluster of possible foxholes. If the telecom line is added to the already planned utility trench, the line will impact the identical cultural resources.

While detailed cultural resources information was provided for the linear corridor by the applicant between the site footprint and the intersection of Wiley Well Road and the existing DPV 500 kV line, no cultural resources information was provided for the linear corridor east of this intersection. Based on previous research, staff concludes that the construction of this segment of the proposed project (including buried telecom line) is likely to result in direct and indirect impacts to cultural resources. In particular, contributing elements of the PTN and DTC Cultural Landscapes are expected. Some of these sites may have been determined ineligible for the CRHR and NRHP during previous archaeological surveys. However, the establishment of two new cultural landscapes would require that these resources be re-evaluated to determine their role in the context of these landscapes. In addition, previous research suggests that the project area is one of high ethnographic sensitivity. Unidentified Traditional Cultural Properties may be present. Future cultural resources surveys and analyses conducted by the

CPUC and BLM would need to address potential impacts to cultural resources in the unanalyzed area, identify impacts to possible TCPs, and identify contributors to the two new cultural landscapes.

Impacts

Direct, indirect and cumulative impacts would be similar for CRS expansion, the gen-tie connection and the telecommunication systems; therefore, impacts from all three project elements are discussed jointly below.

Direct Impacts

Direct impacts to cultural resources would potentially occur from ground disturbance during construction. Staff expects ground disturbance to consist of site grading and compaction for substation construction, excavation for tower footings for the gen-tie connection, and trenching for installation for the telecommunications system. Cultural resources located within the proposed project area are expected to be completely destroyed by this ground disturbance. At a minimum these cultural resources would include the 19 resources located within the GSEP linear corridor/buried telecom line. Additional cultural resources subject to direct impacts would likely be identified by future CPUC and BLM analyses.

Indirect Impacts

Indirect impacts to cultural resources can have both physical and cultural or spiritual components. The construction of the proposed project could potentially result in increased visitation to nearby archaeological sites, and in turn result in erosion and vandalism. Alternatively, the historical integrity of nearby ethnographic resources (or TCPs) could be visually degraded by the proposed project. Impacts to the integrity of ethnographic resources can only be identified by members of the community who value the resources culturally and/or spiritually, in this case Native Americans. BLM is currently in the process of consulting with local Native American groups regarding impacts and potential mitigation for the GSEP project area. As discussed earlier, previous research suggests that the project area is one of high ethnographic sensitivity. Unidentified Traditional Cultural Properties may be present.

Cumulative Impacts

Cumulative impacts resulting for the project would be similar to the GSEP Project. The proposed project impacts, when combined with impacts from past, present, and reasonably foreseeable projects, contribute in a small but significant way to the cumulatively considerable adverse impacts for cultural resources at both the local I-10 Corridor and regional levels. This analysis, presented in detail in the GSEP RSA Section C.3.6.5., estimates that more than 800 sites within the I-10 Corridor, and 17,000 sites within the Southern California Desert Region, would potentially be destroyed. Staff concludes that mitigation can reduce the impact of this destruction, but not to a less-than-significant level.

Impact Minimization Measures

Staff concludes that the most appropriate impact minimization measures for the CRS/GSEP Project are a selection of the cultural resources conditions of certification

proposed in the GSEP FSA. The primary reason for this conclusion stems from the fact that the proposed CRS/GSEP Project would impact the same 19 cultural resources as the GSEP linear corridor. These conditions were crafted specifically for these 19 cultural resources, and additional conditions are not necessary. Further, these conditions were designed for particular prehistoric and historic site types common to the PTN and DTC Cultural Landscapes. Newly identified sites should be accommodated by the existing conditions. Finally, this decision is consistent with staff's decision to coordinate the mitigation of all impacts to PTNCL and DTCCL potential contributors by developing shared conditions of certification for the three solar projects proposed by NextEra and Solar Millennium for areas north of the I-10 corridor between Blythe and Desert Center: Genesis Solar Energy Project, Blythe Solar Power Project, and Palen Solar Power Project. The conditions relevant to the proposed project are summarized below, and presented in detail in GSEP RSA Section C.3.6.7.

- **CUL-1** and **CUL-2** would fund programs to define, document, and nominate to the NRHP two cultural landscapes that the proposed project shares with GSEP and two other nearby solar projects, identifying specialists who would be hired to supervise the mitigation of the proposed projects cumulative impacts to these resources and establishing a fund, to which multiple project owners will contribute, to hire these specialists. While the implementation of these conditions would reduce the proposed projects cumulative impacts to the greatest extent possible, they would still be cumulatively considerable.
- **CUL-3** and **CUL-4** are administrative conditions that set out who the people would be who will implement the balance of the conditions, what are their qualifications and roles would be, and the information the project owner would supply them to help them fulfill those roles.
- **CUL-5** provides for the preparation and implementation of the Cultural Resources Monitoring and Mitigation Plan (CRMMP), which would structure and govern the implementation of the broader treatment program.
- **CUL-6** provides for the preparation of a final report to analyze, interpret, and document the ultimate results of the project cultural resources management program.
- **CUL-7** would provide training of project personnel to identify, protect, and provide appropriate notice about known and new potential cultural resources in the project construction area.
- **CUL-8** and **CUL-9** would provide construction monitoring and cultural resources discovery protocols.
- **CUL-10** through **CUL-13** and **CUL-17** are treatment conditions for direct impacts to historic-period and prehistoric resources that would reduce the severity of the proposed project impacts to less-than-significant.
- Finally, **CUL-16** has the potential to reduce indirect impacts such as vandalism to PTNCL contributors through monitoring.

D.5.3.4 GEOLOGY AND PALEONTOLOGY

Environmental Setting

The environmental setting for geological and paleontological resources is common to the proposed CRS expansion, gen-tie connection, and telecommunication system areas. The western portion of the proposed telecommunication system would be co-located with the GSEP natural gas pipeline and access road; the geologic setting of these linear features is described in Section D.2 of the GSEP RSA.

Geology

The proposed project area is located in the southeastern portion of the Mojave Desert geomorphic province (CGS 2002a), in the Mojave Desert of Southern California near the Arizona border. The Mojave Desert is a broad interior region of isolated mountain ranges which separate vast expanses of desert plains and interior drainage basins. The physiographic province is wedge-shaped, and separated from the Sierra Nevada and Basin and Range geomorphic provinces by the northeast-striking Garlock Fault on the northwest side. The northwest-striking San Andreas Fault defines the southwestern boundary, beyond which lie the Transverse Ranges and Colorado Desert geomorphic provinces. The topography and structural fabric in the Mojave Desert is predominately southeast to northwest, and is associated with faulting oriented similar to the San Andreas Fault. A secondary east to west orientation correlates with structural trends in the Transverse Ranges geomorphic province.

As described in the GSEP RSA, quaternary age alluvial, lacustrine and eolian sedimentary deposits are mapped in the vicinity of the GSEP site, which encompasses the CRS Expansion and GSEP Interconnection project area. Marine and transitional sediments of the Pliocene Age Bouse Formation are presumed to underlie alluvial fan deposits, and metasedimentary bedrock of the McCoy Mountains Formation outcrop in the McCoy and Palen Mountains within the project area. Holocene units, which include eolian sands, younger alluvium, and playa lake deposits, are mapped within the proposed telecommunication route.

Mineral Resources

The proposed GSEP site is located within Mineral Resource Zone 4, which denotes “areas of no known mineral occurrences where geological information does not rule out either the presence or absence of significant mineral resources” (CDMG 1994); however, no economically viable mineral deposits are known to be present (CDMG 1994). Many inactive mines and mineral prospects are hosted by in metamorphic and intrusive basement rocks within 10 miles of the proposed project. These have produced a number of precious and base metals and minerals, including iron (magnetite), gold, silver, copper, uranium, and pyrophyllite, several borrow pits are present along Interstate 10. No mines are known to have existed within the proposed project boundaries (USGS 2008).

Seismicity

The proposed project area is not crossed by any known active faults or designated Alquist-Priolo Earthquake Fault Zone (CGS 2002b). The peak ground acceleration for

this area on the California Geological Survey Probabilistic Seismic Hazards Assessment maps is less than 0.2g (CGS 2002c), and thus is not expected to undergo strong groundshaking. Also, the substation site is located on a flat to gently sloping mesa and is not susceptible to landslides. Given the low potential for strong groundshaking and a depth to groundwater of 61 to 81 feet, the telecommunication route near the GSEP site has a low potential for liquefaction. As depth to groundwater increases towards the CRS substation, the liquefaction potential increases. The paleontological sensitivity map produced by the Riverside County Land Information System designates the CRS expansion area as having moderate liquefaction potential and as being susceptible to subsidence.

Paleontology

In the GSEP RSA, which included an analysis of the underground telecommunication line route, staff concludes that the paleontological resource sensitivity of Quaternary age sediments varies from low in Holocene age younger alluviual, lacustrine and eolian deposits at shallow depths to high as Pleistocene age older alluvium and lacustrine deposits are encountered at deeper depths. All subsurface older Quaternary age alluvial and lacustrine sediments are highly sensitive.

Staff considers the probability for significant paleontological resources to be encountered during construction activities to be low in Holocene age deposits. However, grading and trenching may penetrate underlying Pleistocene age soils at undetermined depths. Overall, the potential for exposure of paleontological resources during trenching would be considered as high, until determined otherwise by a qualified professional paleontologist.

The paleontological sensitivity map produced by the Riverside County land Information System designates the CRS expansion area as having low and undetermined paleontological sensitivity.

Impacts

Impacts to geologic resources would potentially occur from ground disturbance during construction. Ground disturbance from site grading for substation construction, excavation for tower footings for the gen-tie connection, and trenching for installation for the telecommunications system would result in similar impacts to geological and paleontological resources; therefore, impacts from all three project elements are discussed jointly below.

Geologic Hazards

Prior to the start of construction, SCE expects to conduct a geotechnical study of the project site and the transmission line routes that would include an evaluation of the depth to the water table, evidence of faulting, liquefaction potential, physical properties of subsurface soils, soil resistivity, slope stability, and the presence of hazardous materials (TTEC 2010p). The results of the geotechnical investigation would then be applied to the project's engineering design to ensure that potential impacts to geology are avoided or minimized.

There are no known active faults in the immediate vicinity of the proposed substation site. As such, the hazard of direct surface displacement by faulting of any portion of the proposed facility is not expected.

As described above, the project would be located in an area of minimal seismicity and would only be susceptible to groundshaking in the event of a significant earthquake on any of the regional active faults. The project facilities would be engineered to withstand potential ground shaking in accordance with the CPUC's General Order 95 and would meet relevant seismic requirements. Proper design would reduce the threat of damage to the proposed facilities from the potential maximum ground acceleration to less than significant levels.

The susceptibility of a site to liquefaction is a function of the depth, density, and water content of the granular sediments and the magnitude and frequency of earthquakes in the surrounding region. As described above the project area has moderate liquefaction potential and is susceptible to subsidence. Despite the presence of potentially liquefiable alluvial sediments at the project site, anticipated seismic groundshaking is not expected to be of sufficient frequency or intensity to cause liquefaction of these sediments. A properly designed facility would reduce the minor threat of damage to the proposed facilities as a result of lateral spreading, subsidence, liquefaction, or collapse, to less than significant levels. The CRS/GSEP Project is located on relatively level ground and thus no impact is expected from landslides.

Construction would occur in relatively flat terrain and the geologic investigation described above would identify the affected soils and their site-specific erosion potential. Erosion control best BMPs would be used where excavation and grading occurs as would be required by the project National Pollution Discharge Elimination System (NPDES) permits and the SWPPP (see the **Soils and Water Resources** section of this appendix). With proper construction practices there should be no notable erosion or transport of sediment from the site. Considering these factors, there should be little or no impact due to erosion or loss of topsoil. Potential impacts would be less than significant and no mitigation is recommended.

Paleontology

Construction of the telecommunications facilities could disturb significant paleontological resources located within the project area as a result of construction-related ground disturbances. Indirect impacts to paleontological resources may include erosion of features due to channeling of runoff or damage to outcrop areas due to earth-shaking activities associated with drilling, trenching, or grading activities. Impacts to paleontological resources, if present, would be potentially significant.

Minerals

Since there are no known mining operations identified in the project area, construction of the project is unlikely to interfere with daily ongoing or planned mining operations. No impacts would occur and no mitigation is recommended.

Cumulative Impacts

Cumulative impacts resulting from the proposed CRS/GSEP Project would be similar to the GSEP Project albeit at a much reduced level; refer to Section D.2.9 of the RSA. Implementation of the conditions of certification recommended below would mitigate potential geological and paleontological impacts below the level of significance, thereby eliminating the projects contribution to cumulatively considerable impacts.

Impact Minimization Measures

As described above, soils and rock testing should be conducted and analyzed by a professional, licensed geotechnical engineer or geologist to determine existing foundation conditions, as described in conditions of certification **GEN-1, GEN-5, and CIVIL-1** in the **Facility Design** section of the GSEP RSA. The results of the geotechnical investigation would then be applied to the project's engineering design and this would ensure that potential impacts to geology are avoided or minimized.

Implementation of a worker education program in conjunction with monitoring of earthwork activities by qualified professional paleontologists (paleontological resource specialist, or PRS) would mitigate potential unforeseen impacts to less than significant. Recommended paleontology mitigation requirements are described in conditions of certification **PAL-1** to **PAL-7** in the **Geology, Paleontology, and Minerals** section of the GSEP RSA. Earthwork would be halted any time potential fossils are recognized by either the paleontologist or the worker. For finds deemed significant by the PRS, earthwork cannot restart until all fossils in that strata, including those below the design depth of the excavation, are collected. When properly implemented, the conditions of certification would yield a net gain to the science of paleontology since fossils that would not otherwise have been discovered can be collected, identified, studied, and properly curated. A paleontological resource specialist would be retained, for the project by the applicant, to produce a monitoring and mitigation plan, conduct the worker training, and provide the monitoring.

Implementation of staff's recommended conditions of certification as presented in the GSEP RSA, or similar measures would reduce potential direct, indirect, and cumulative impacts to geological and paleontological resources to less than significant.

D.5.3.5 LAND USE

Environmental Setting

This land use analysis focuses on the CRS/GSEP Project's consistency with existing land use resources, land use plans, ordinances, regulations, policies, and the project's compatibility with existing or reasonably foreseeable land uses. The proposed CRS/GSEP Project site can be characterized as open space, with no residential or commercial development within the vicinity of the site. The surrounding area consists of undeveloped desert land surrounded by the McCoy Mountains to the north, the Palen Mountains (including the Palen/McCoy Wilderness Area) to the northwest and Mule Mountains to south. The Chuckwalla Valley Dune Thicket ACEC occurs adjacent to the southwest of the proposed gen-tie line, just south of its crossing over I-10.

The CRS expansion, gen-tie and telecommunications system is located in an area designated as Open Space-Rural by the Riverside County General plan (GP) (RCTLMA 2008). The proposed CRS/GSEP Project components would be located within and immediately north and west of the proposed CRS expansion boundary. The proposed project area is located entirely on BLM land designated as Multiple Use (MU) by the California Desert Conservation Area (CDCA) Plan (BLM 1980, as amended). The CDCA MU classification states that new transmission facilities are allowed only in designated utility corridors areas. The CRS/GSEP Project would be located in an existing BLM utility corridor (BLM 2009g).

Impacts

The proposed gen-tie, including the transmission stringing on the BEPTL, as well as the proposed natural gas line and access road were analyzed in Section C.6 Land Use of the GSEP RSA (CEC 2010j). The proposed gen-tie connection from GSEP to CRS, natural-gas line and access road would be located in a designated utility corridor (BLM 2009g). Since the proposed gen-tie, natural gas line and access road would be located in an established corridor designated by BLM for this type of use, which minimizes the number of separate rights-of-way and encourages the joint use of utility corridors, staff concluded that land use impacts of the proposed project linears would be less than significant and would comply with applicable land use plans, ordinances, regulations, policies and reasonably foreseeable land uses (CEC 2010j, Section C.6.4.3).

Since the proposed CRS expansion, gen-tie, and telecommunications system would be located on BLM lands, compliance with the standards of the Riverside County zoning ordinance is not required. In addition, the proposed project would not require an amendment to the CDCA Plan given its location within a designated utility corridor.

The Farmland Mapping and Monitoring Program (FMMP) of the California Department of Conservation (DOC) provides statistics on conversion of farmland to non-agricultural uses throughout the State. According to the farmland map of Riverside County, the proposed CRS/GSEP Project site is entirely within BLM-administered lands, and has not been surveyed or included in a farmland mapping category (DOC 2008) of the DOC. No surveyed agricultural lands are adjacent to the proposed GSEP site. The proposed project would not impact any agriculture or rangelands, recreation and wilderness areas, areas designated by BLM as Herd Areas or Herd Management Areas or divide an existing community. The proposed project does not conflict with any current or proposed land use plans (BLM 2009c, BLM 2009e, CEC 2010j).

Cumulative Impacts

The cumulative impacts of the GSEP energy project, transmission line, natural gas line and access road were analyzed in the Land Use section of the GSEP RSA. Staff concluded that the proposed GSEP would combine with other past and reasonably foreseeable future projects to substantially reduce scenic values of wilderness areas and recreational resources in the Chuckwalla Valley and southern California desert region and therefore, would result in a significant and unavoidable cumulative land use impact in this regard.

Impact Minimization Measures

Several reasonably foreseeable projects are proposed for lands surrounding the I-10 corridor in eastern Riverside County. Construction schedules associated with these projects may overlap and may potentially affect land use with regard to noise, dust, and traffic. Implementation of a measure similar to condition of certification **TRANS- 1** (CEC 2010); which encourages applicants of the Palen, Blythe, and Genesis projects to coordinate construction schedules in a way that facilitates the movement of construction workers during overlapping construction periods as to minimize traffic on I-10 and transport workers to their respective job sites along the I-10, would reduce potentially cumulative impacts on visitors to recreation and wilderness resources surrounding the proposed project.

No additional minimization measures are recommended beyond the proposed GSEP project's compliance with all applicable land use LORS for both operation and construction.

D.5.3.6 NOISE AND VIBRATION

Environmental Setting

The environmental setting for the CRS/GSEP Project is shared among each of the project components. Aside from the telecommunication line that extends from the CRS to the GSEP, all project components would occur within and immediately north and west of the proposed CRS expansion boundary. The proposed telecommunications system would be located adjacent to the proposed GSEP gen-tie connection ROW in its entirety and would be co-located with the proposed GSEP natural gas pipeline and access road ROW along the western portion of the route. The environmental setting and noise impacts of the proposed gen-tie was described and analyzed in Section C.7 of the GSEP RSA.

The proposed CRS/GSEP Project is located within the eastern portion of Riverside County approximately 12 miles west of the city of Blythe in a largely rural, open space area. As described in the GSEP RSA, existing noise sources in the proposed project area include air traffic and highway traffic (Section C.7.4.1). The nearest noise-sensitive receptors are the Chuckwalla Valley State Prison and Ironwood State Prison, located roughly 2 miles south of the proposed telecommunications system, where the proposed gen-tie line joins the existing Blythe Energy Project Transmission Line.

Impacts

Construction

The CRS/GSEP Project would generate noise above ambient levels from construction of the substation expansion, gen-tie connection, and installation of the telecommunication cables. Construction noise would include the operation of construction equipment and vehicles at the proposed construction sites, and the transport of construction materials and workers as vehicle trips to and from the project sites. Construction would generate temporary noise levels from equipment and vehicles during site grading activities, substation construction, trench construction, and surface paving. Construction along the telecommunication route would be temporary and short

term while construction of the substation expansion would be over a longer term at the substation site; the exact duration is unknown at this time. There are no occupied residences or noise sensitive receptors surrounding the proposed CRS/GSEP Project locations. The nearest noise-sensitive receptors, Chuckwalla Valley State Prison and Ironwood State Prison, are located approximately 6.5 miles southwest of the proposed CRS expansion site and approximately 2 miles south of sections of the telecommunications system route.

Noise impacts from construction are a function of the noise generated by equipment, the location and sensitivity of nearby land uses, and the timing and duration of the noise-generating activities. Potential impacts to noise-sensitive receptors from construction noise would be limited to receptors in proximity to CRS facilities and the telecommunication system route.

Typical construction equipment is estimated to generate maximum noise levels of short duration not to exceed 94 A-weighted decibels (dBA) at 50 feet. Without intervening topography or structures, these levels would attenuate over distance at a conservative rate of approximately 6 dBA per doubling of distance (i.e., 80 dBA at 50 feet would attenuate to approximately 74 dBA at 100 feet, and approximately 68 dBA at 200 feet, etc.). Assuming an average construction noise of 94 dBA L_{eq} at 50 feet from the noise center (the upper range of noise levels for construction equipment), project construction noise would attenuate to 52 dBA at the state prisons, approximately 2 miles south of sections the telecommunication system route. Project construction noise would further attenuate to 40 dBA at a distance of 5 miles from the proposed CRS expansion location.

While staff does not have information on noise associated with substation expansion, Riverside County Code 847 limits noisy construction activity to daylight hours when construction activities occur within one quarter mile of noise-sensitive receptors. Given the distance between construction activities and noise-sensitive receptors, this limit does not apply. Because there are no noise sensitive receptors in the proposed project vicinity, the GSEP RSA found noise impacts from construction and operation of the proposed project linears to be less than significant. Staff assumes that with appropriate mitigation, noise impacts from construction of the expanded substation would also be less than significant.

Noise impacts from construction of the gas pipeline and gen-tie were analyzed in the GSEP RSA (Section C.7.4.2) and found to be less than significant. Similarly, construction of the underground telecom line is not anticipated to be substantial and would not exceed Riverside County and CEQA significance thresholds.

CRS Expansion and Gen-Tie Connection

The substation expansion would generate noise primarily from facility site construction (i.e., substation and interconnection elements) and linear facilities installation (i.e., telecommunications cable). Construction activities would include site grading, facility installation, trenching and paving. Project noise from the substation expansion and interconnection are not anticipated to exceed any County or CEQA significance thresholds. Noise-sensitive receptors are not located in proximity to the site and would not be affected by construction noise.

Telecommunications System

Ground disturbing activities including new trenching for the underground telecom line and connection of telecom lines to the MEER would generate typical construction noise levels. Trenching activities would generate temporary short-term noise levels of approximately 52 dBA to the receptors nearest the trenching activities. Since Riverside County Code limitations do not apply to this project given the distance of the proposed project from noise-sensitive receptors, trenching activities for the telecom system would not result in a significant noise impact.

Vibration

Potential impacts from vibration were analyzed in Section C.7.4.2 of the GSEP RSA. Equipment needed for the proposed project construction is not likely to create vibration impacts that would be perceived at the nearest noise-sensitive receptor. No impact from vibration would occur.

Operation

Operational noise impacts of the CRS/GSEP Project would be insignificant. Noise associated with the telecom line and substation would be limited to occasional operation and maintenance activities, including emergency repair and there are no nearby receptors.

Worker Effects

SCE would be required to protect construction, operation and maintenance workers from noise hazards per applicable LORS.

Cumulative Impacts

Cumulative impacts were analyzed in Section C.7.8 of the GSEP RSA and it was determined that no cumulative noise impact would result from the proposed GSEP Project. Similarly, no cumulative impacts would be expected from the CRS/GSEP Project.

Impact Minimization Measures

Noise levels from project construction and operation would attenuate to an acceptable level to the nearest noise-sensitive receptors. In the event that actual construction noise should annoy sensitive receptors, implementation of measures similar to conditions of certification **NOISE-1** and **NOISE-2** as described in the Noise and Vibration section of the GSEP RSA, would establish a public notification process to notify nearby residents of the project construction and operation, and a Noise Complaint Process that would require the applicant to resolve any complaints regarding project noise. In addition, to ensure that construction, operation and maintenance workers are adequately protected, condition of certification **NOISE-3** and **NOISE-4** (noise control program), as described in the **Noise and Vibration** section of the GSEP RSA, would reduce noise impacts to workers.

It is likely that no additional noise control features or mitigation measures are needed beyond the proposed CRS/GSEP Project's compliance with all applicable noise and vibration LORS for both construction and operation. The CRS/GSEP Project is not

anticipated to produce significant adverse noise impacts on people within the affected area, directly, indirectly, or cumulatively.

D.5.3.7 SOCIOECONOMICS

Environmental Setting

The proposed CRS/GSEP Project is located in the Southern California inland desert on federal land managed by the BLM, approximately 12 miles west of the City of Blythe and approximately 16 miles west of the California-Arizona border in unincorporated eastern Riverside County. The town of Desert Center is located approximately 35 miles west of the proposed CRS expansion site. Research shows that workers may commute as much as two hours each direction from their communities rather than relocate (EPRI 1982). Therefore, the local and regional study area is considered to be Riverside County, CA; San Bernardino County, CA; and La Paz County, AZ.

Population data for the GSEP Project is considered applicable to the CRS expansion area and the telecom route. The total population within a six-mile radius of the proposed GSEP Project is 8,308 persons (including prison populations of 3,913 at Chuckwalla and 3,945 at Ironwood state prisons), and the total minority population is 6,628 persons or 79.77 percent of the total population. The total below-poverty-level population is 0.00 percent within this area. In addition, the current vacancy rates for the cities of Blythe, CA and Ehrenberg, AZ are 16.1 and 34.9 percent, respectively (GSEP 2009a AFC Section 5.8).

Impacts

Socioeconomic impacts could result from long-term employment of people from regions outside the study area as a result of relocations and population influx; however, no significant adverse socioeconomics impacts would occur as result of the construction or operation of the CRS/GSEP Project given that no socioeconomic impacts were identified for the GSEP Project.

Growth Inducing Impacts

To determine whether the proposed CRS/GSEP Project would induce population growth, staff analyzes the availability of the local workforce and the population within the region. Staff defines “local workforce” for the CRS/GSEP Project to be Riverside/San Bernardino/Ontario Metropolitan Statistical Area (MSA), which includes both Riverside and San Bernardino Counties. The city of Ehrenberg within La Paz County, AZ is located within the proposed project local and regional study areas, respectively, and could contribute to the local workforce.

Construction

It is anticipated that the construction period for the CRS/GSEP Project would occur over a 20-month construction period. There would be an average of approximately 25 daily construction workers on any given day, depending on the month and the work required. Laborers would consist of craftspeople and supervisory, support, and construction management personnel on site during construction. As evaluated in the Section C.8.4.2 of the GSEP RSA, there is more than adequate local availability of construction

workforce within the Riverside/San Bernardino/Ontario MSA alone for the GSEP. As such, the additional 25 workers needed for the proposed CRS expansion, gen-tie, and telecommunications system would not create a significant impact on the local workforce.

Should some construction workers from within the study area choose to stay temporarily at a local area motel or hotel close to the proposed CRS/GSEP Project site, there is ample transient housing available. There are approximately 630 hotel/motel rooms and suites among 11 different establishments in the Blythe area. In addition, the current vacancy rates for the cities of Blythe, CA and Ehrenberg, AZ are 16.1 and 34.9 percent, respectively (CEC 2010j). Staff concludes that inducement of substantial population growth either directly or indirectly by the CRS/GSEP Project would not be significant or adverse and and construction of the proposed project would not encourage people to permanently relocate to the area.

Operation

Operation of the proposed project would not require any addition to the current workforce. The CRS expansion, gen-tie, and telecommunication system would not permanently or significantly increase the population in the area and therefore would not result in significant demands on law enforcement or medical services, schools nor parks or recreation. The nearest residences would be more than five miles from the proposed CRS site, so no populations, high-minority, low-income, or otherwise, would be affected by the proposed project.

Cumulative Impacts

The cumulative impacts of construction and operation of the proposed GSEP Project ancillary facilities, which include the transmission line and its associated infrastructure was analyzed in the GSEP RSA. Foreseeable development in the project area includes primarily renewable energy electrical generation and transmission infrastructure projects. With the large number of renewable energy projects occurring within the GSEP regional study area, it is possible that some overlap of construction phasing could occur between the GSEP and the cumulative development projects. Refer to Section B.3., Cumulative Scenario of the GSEP RSA for a complete list of the cumulative projects. Staff concluded that the local and regional labor force would adequately serve construction and operation of the proposed GSEP and it would not contribute to cumulative increases in population that would generate an increase in demand for local housing and public services. Staff concludes that construction and operation of the proposed CRS/GSEP Project would not contribute to adverse cumulative socioeconomic impacts.

Impact Minimization Measures

The proposed project would not cause a significant adverse direct, indirect, or cumulative impact to the study area's population, housing, schools, law enforcement, emergency services, hospitals, and utilities. In addition, because there would be no adverse project-related socioeconomic impacts, minority and low-income populations would not be disproportionately impacted. No impact minimization measures are recommended.

D.5.3.8 SOIL AND WATER RESOURCES

Environmental Setting

The environmental setting for the proposed CRS expansion and gen-tie connection are the same, and are discussed together below. The western portion of the proposed telecommunications system would be co-located with the GSEP natural gas pipeline and access road; the soil and water resources setting of these linear features is described in Section C.9.4.1 of the GSEP RSA.

Regional Setting

The project area is located within the Mojave Desert Geomorphic Province, which is a broad interior region of isolated mountain ranges separated by expanses of desert plains/valleys. It has an interior enclosed drainage and many playas, but no perennial streams or permanent natural bodies of water. Standing water may persist for short periods in dry lakes and low areas after heavy rainfall events. Several ephemeral desert washes extending from mountain ranges to playas traverse the project area.

CRS Expansion and Gen-Tie Connection

The CRS expansion and gen-tie connection area is east of east of the Chuckwalla Dunes within the Palo Verde Mesa, which covers approximately 280 square miles and topographically lies about 70 feet above the elevation of the adjacent Palo Verde Valley to the east. The proposed CRS expansion and gen-tie connection area shows evidence of surface storm water runoff (TTEC 2010p). While no designated blue-line streams occur within the project area, staff does not have information about the presence of ephemeral washes.

The CRS expansion and gen-tie connection area would be located within the Palo Verde Mesa groundwater basin; no groundwater would be used for construction or operation of this project component. No information is available at this time regarding the source of water that would be needed during construction of the substation expansion.

The USDA soil survey classified the soil within the proposed CRS expansion and gen-tie area as typical torripsamments, mixed, hyperthermic (Rositas series). The Rositas series consists of very deep, somewhat excessively drained soils formed in sandy eolian material. Rositas soils are on dunes and sand sheets; are reported to be somewhat excessively drained; have negligible to low runoff; and rapid permeability (USDA 2010).

Telecommunications System

The proposed telecommunication route is located within the Chuckwalla Valley along the western portion near the GSEP site and within the Palo Verde Mesa along the eastern portion of the route near the CRS expansion and gen-tie connection area. The elevation of Chuckwalla Valley ranges from under 400 feet at Ford Dry Lake to approximately 1,800 feet above mean sea level (msl) along the upper portions of the alluvial fans that ring the valley flanks. The Palo Verde Mesa is described above. Although there are several ephemeral desert washes along the route, the only perennial

surface water resources are in the eastern Chuckwalla Valley and include McCoy Spring, at the foot of the McCoy Mountains approximately 6.5 miles northeast of the GSEP site, and Chuckwalla Spring, approximately 15 miles south of the GSEP site at the foot of the Chuckwalla Mountains.

The telecommunications system would be located within the Chuckwalla and Palo Verde Mesa groundwater basins; no groundwater would be used for construction or operation of this project component.

Soils within the proposed telecommunication system route are classified by USDA soil survey as typical of the Rositas series (USDA 2010), which is described above under CRS expansion and gen-tie connection.

Impacts

Potential direct and indirect impacts to soil and water resources are primarily related to drainage, erosion, and sedimentation control during construction and operation. Most of the potential impacts would be expected to occur during construction, with a lower potential of occurring during operation. Potential impacts resulting from ground disturbance would be similar for all proposed CRS/GSEP Project elements and are discussed jointly below.

Although there are no perennial water resources, the CRS expansion and gen-tie connection area shows evidence of surface storm water runoff. Additionally, it is unclear whether the substation expansion or other project components would affect ephemeral desert washes. SCE may need to redirect surface water and protect the substation from runoff by installing a berm designed to direct the flow around both sides of the substation pad. These drainage improvements would potentially disturb an area approximately 80 feet wide around three sides of the substation, resulting in a total permanent disturbance area of approximately 20 acres. Internal surface runoff would be directed towards a 0.5-acre detention basin located at the south end of the substation (TTEC 2010p).

Soil related issues in the project area include a high potential for wind and water erosion of soils disturbed during construction. Disturbed soils lack their normal, although limited, natural vegetative cover. If ephemeral drainages are present, erosion of disturbed areas could transport/deposit sediment downstream within an ephemeral drainage, which would result in a significant adverse impact to water quality. Further, inadvertent construction-related discharges of petroleum hydrocarbons or other contaminants could potentially result in significant impacts to water quality in surface flow if improperly contained.

The proposed CRS/GSEP Project area is not located within a 100-year floodplain and therefore would not exacerbate flood conditions or substantially impede flood flows.

Groundwater within the Chuckwalla and Palo Verde Mesa groundwater basins is recharged through the pervious surfaces throughout the basins, including those within graveled portions of the proposed CRS expansion area. Although there would be some impervious paved surfaces created by the proposed substation expansion, the net decrease in water recharged to the basins would be negligible. A net deficit in aquifer

storage volume or a substantial lowering of the local groundwater table would not occur during construction or operation. Further, regional groundwater occurs at a level deeper than any proposed excavations and is not expected to be encountered during construction. Impacts to groundwater would be less than significant and no mitigation is recommended.

Cumulative Impacts

Cumulative impacts resulting from the proposed CRS/GSEP Project would be similar to the GSEP Project albeit at a much reduced level; refer to Section C.9.8 of the GSEP RSA. Implementation of the conditions of certification recommended below would mitigate potential soil and water resources impacts below the level of significance. Likewise,the project's contribution to cumulative impacts would be less than considerable..

Impact Minimization Measures

The **Soil and Water Resources** section of the GSEP RSA discusses mitigation measures that are designed to avoid and reduce the amount of soil loss due to wind and water erosion. These mitigation measures include implementation of a construction Storm Water Pollution Prevention Plan (SWPPP) or Drainage Erosion and Sedimentation Control Plan (DESCP), as described in Condition of Certification **Soil & Water-1**. The Clean Water Act (CWA) (33 U.S.C. Section 1251 *et seq*.), regulates discharges through the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). Pursuant to NPDES permit requirements, SCE would be required to prepare and adhere to a SWPPP that would include temporary and permanent Best Management Practices (BMPs) to reduce or prevent construction pollutants from leaving the site in storm water runoff and minimize construction erosion. The content of a DESCP is very similar to a SWPPP, but the DESCP covers both construction and operation in one document whereas separate SWPPPs are prepared for construction and operation.

Examples of BMPs and approaches to erosion control that should be implemented as described in Condition of Certification **Soil & Water-1** include:

- Minimizing initial land disturbance and clearing within the working area;
- Segregating topsoil, stockpiling and replacing;
- Applying temporary and permanent erosion control measures; and
- Restoration of disturbed areas.

If drainage of the existing site is altered, as described above, staff recommends that SCE submit a Project Drainage Report/Plan for review and approval by the appropriate licensing authority (e.g., BLM and CPUC) in coordination with the Colorado River Basin Regional Water Quality Control Board (CRBRWQCB). The project drainage plan, when completed and implemented consistent with the requirements of Condition of Certification **Soil & Water-8** in the GSEP RSA would adequately protect the facility from significant damage due to flooding and mitigate impacts to soils related to water erosion.

SCE must comply with all applicable LORS and incorporate all related requirements of other responsible agencies, potentially including, but not limited to CPUC, BLM, the State Water Resources Control Board/CRBRWQCB, California Department of Fish and Game, Metropolitan Water District, and Riverside County. With implementation of the recommended Conditions of Certification or similar measures, staff anticipates that there would not be any significant adverse direct, indirect, or cumulative impacts to soil and water resources resulting from construction or operation of the proposed CRS/GSEP Project.

D.5.3.9 TRAFFIC & TRANSPORTATION

Environmental Setting

CRS Expansion

The expanded CRS substation would be located 20 miles west of the City of Blythe, and 1.5 miles south of I-10. It would be accessed from I-10, via the Wiley's Well Road interchange, 4.5 miles to the west. (A new access road would follow the transmission interconnection to reach the CRS).

Based on historical rates, the year 2012 estimated average daily traffic count is 3,350 vehicles on I-10 west of Wiley's Well Road and 3,700 vehicles to the east; these estimates do not include projected traffic from the GSEP and other large solar projects. In the project vicinity, I-10 has a two-way capacity of 6,800 vehicles per hour (CEC 2010j).

For construction of the substation expansion, SCE anticipates a minimum of 25 construction personnel on any given day (TTEC 2010p Section 1.3.3.10).

Gen-Tie Connection

The gen-tie would be located on the north side of the substation, and vehicle access would be the same as described above for the CRS expansion. For connection of the gen-tie to the substation, SCE estimates a workforce of 20 over 2 days (TTEC 2010p Table A-2).

Telecommunications System

The telecom line would be built underground from the GSEP to the CRS, following the gen-tie route. Vehicle access would be the same as described above. Trench construction at the CRS would require 5 personnel over 4 days, underground fiber cable installation 5 personnel over 2 days, and telecommunications 2 personnel over 10 days (TTEC 2010p Table A-4). Staff does not have similar data for trenching of the underground telecom line. Staff assumes that the assessment of the natural gas line from the GSEP to the interconnection with the BEPL presented in the GSEP RSA reflects impacts associated with trenching of the underground telecom line, presumed to be co-located with the gas line. Staff does not have information on trenching for the remainder of the telecom line to the CRS, but expects that the analysis of eastern portion of the underground line would be similar to the gas line analysis.

Impacts

The substation expansion could add 25 or more commuter roundtrips per day, in addition to construction vehicles. The number of trips associated with the CRS expansion would vary based on the degree of overlap of activities and whether workers carpool. As with GSEP construction, there is a likelihood that workers would commute to the site via I-10, with 75 percent from the east (Blythe, California and Parker, Arizona) and 25 percent from the west.

The project components would add a minor volume of trips and would not affect I-10 Level of Service (LOS) "A" or capacity in the vicinity. In addition, SCE would repair any construction-related damage to existing roads upon completion of construction, in accordance with local agency requirements.

Cumulative Impacts

Construction of the CRS expansion, gen-tie connection, and telecommunications system would add a minor amount of vehicles to I-10 and would not impact the highway's capacity. However, the CRS/GSEP Project components would have construction schedules (first quarter 2011 to May 2013) that could overlap with construction for the GSEP, Palen, and Blythe solar projects (fourth quarter 2010 through 2016). All three solar projects are located off of I-10, and expect to employ more than 3,000 workers combined during peak construction (CEC 2010j). The overlapping construction could result in an unacceptable LOS. However, conditions of certification identified in Staff Assessments prepared for those projects require traffic coordination and control plans to reduce and local traffic exacerbation. Also, since each project would use a different I-10 offramp/intersection, no substantial highway backup would occur.

Impact Minimization Measures

Implementation of SCE's measures TRANS-1 (traffic control services), TRANS-2 (off-peak hour construction traffic schedule), and TRANS-3 (appropriate permits for modifications or activities within local roadway and railroad ROWs) would minimize impacts to traffic and transportation. In addition, the SCE should follow GSEP Traffic & Transportation condition of certification **TRANS-2** for oversized and overweight vehicles.

D.5.3.10 WASTE MANAGEMENT/HAZARDOUS MATERIALS

Environmental Setting

All of the proposed CRS/GSEP Project components could generate non-hazardous and hazardous wastes. In addition, substation expansion would require soil and vegetation removal (TTEC 2010p), requiring additional disposal. Waste streams generally include solid waste, including excavated soil that could not be backfilled, vegetation and sanitation waste as well as empty cable reels and cut-off pieces of fiber optic cable. All waste streams are regulated and discharges or disposal of any waste material either requires specific permitting, or disposal at a permitted facility based on the type of waste. Both solid and liquid waste streams can be either hazardous or non hazardous, depending on the constituents in the waste stream and the characteristics (e.g.,

ignitability, reactivity, toxicity, and corrosivity) of the waste. The status of the waste stream determines both the storage options for the material, and the disposal method for the material.

As identified in the GSEP AFC (GSEP 2009a), there are seven Class III waste disposal facilities in Riverside County that could potentially take non-hazardous waste generated by the project. They have a combined remaining capacity of 160 million cubic yards. The nearest is the Blythe Sanitary Landfill, which has a remaining capacity of 2.3 million cubic yards and accepts 400 tons per day. Hazardous waste landfills include Clean Harbors' Buttonwillow in Kern County and Chemical Waste Management's Kettleman Hills Landfill in Kings County.

Hazardous materials – in the form of contaminated soil and unexploded ordnance – may be present on the site. As such, SCE expects to conduct a geotechnical study prior to construction that would include evaluation of the presence of contaminated soils. A Phase I Environmental Site Assessment would be required prior to construction of the substation expansion.

Impacts

Ground surface improvement for the substation expansion would generate 20,000 cubic yards of soil and vegetation waste for export (TTEC 2010p). SCE did not quantify other waste streams for the CRS expansion or for the gen-tie connection and underground telecom installation, but the total quantity would be expected to be much less than that for GSEP construction.

Construction of the substation expansion would result in the generation of various waste materials that can be recycled and salvaged. Waste items and materials would be collected by construction crews and separated into roll off boxes at the materials staging area. All waste materials that are not recycled would be categorized by SCE in order to assure appropriate final disposal. Nonhazardous waste would be transported to local authorized waste management facilities. Given the 2.3 million cubic yard remaining capacity of the Blythe Sanitary Landfill and the 160 million cubic yard remaining capacity of all Class III landfills in Riverside County, the project's non-hazardous waste disposal would not create a significant environmental impact.

Hazardous materials would include small amounts of fuels, lubricants, and cleaning solvents. All hazardous materials would be stored, handled and used in accordance with applicable regulations. Storage locations would be designated in the Storm Water Pollution Prevention Plan (SWPPP) prepared for the CRS/GSEP and GSEP projects. The SWPPP would also include protective measures, notifications, and cleanup requirements for any incidental spills or other potential releases of hazardous materials. Material Safety Data Sheets would be made available at the construction site for all crew workers.

At the conclusion of construction, SCE would conduct a final inspection to ensure that all work areas are brought to the original conditions (e.g., free of trash, litter etc).

Cumulative Impacts

Large facilities in the area that currently generate waste include the Chuckwalla Valley State Prison, Ironwood State Prison, and Blythe Energy Project. In addition, four commercial projects, 15 residential projects, and 16 renewable projects are proposed along I-10 corridor in the GSEP region (CEC 2010j). Even if all reasonably forseeable projects are built in addition to the proposed substation components, waste disposal would not result in a significant cumulative impact. Furthermore, it is unlikely that the Blythe Sanitary Landfill's 400 tons per day disposal limit would be exceeded.

Impact Minimization Measures

Under SCE's mitigation measure HAZ-1, a Phase I ESA would be performed at the expanded substation location and along any newly acquired transmission and subtransmission line ROWs. This would reduce the potential for trenching and excavation to expose contaminated soil to construction workers. In addition, SCE's HAZ-2 through HAZ-7 would implement standard fire prevention, waste handling, storage, and disposal measures.

Measures **WASTE-1** through **WASTE-3** in the Waste Management section of the GSEP further discuss procedures in the event that contamination is identified during assessment of the project site. **WASTE-4** and **WASTE-8** require preparation of a Construction Waste Management Plan and goals for recycling and minimization of site preparation (soil and vegetation) and construction waste. **WASTE-5** includes steps for UXO identification, training, and reporting.

D.5.3.11 VISUAL RESOURCES

The visual resources analysis of the CRS/GSEP Project is based on applicant-provided visual resource information for the GSEP (GSEP 2009a, TTEC 2010p) and the Revised Cultural Resources Assessment for the GSEP Project. In the GSEP RSA, staff employed a combination of the standard visual assessment methodology developed by California Energy Commission staff and a visual resource inventory and Interim Visual Resource Management Class mapping of the area prepared for the DPV No. 2 Transmission Line FEIS/FEIR. In addition, staff relied on the visual analysis of the Colorado River Substation (or DSWTP MSO) in Appendix B of the Blythe Energy Project Transmission Line Energy Commission Revised Staff Assessment (CEC, 2006). The setting for visual resources is shared by the proposed CRS expansion and gen-tie connection. Therefore they are considered together in the following discussion. Further, the telecommunication system would be co-located with the GSEP natural gas pipeline and access road. In these shared locations, staff has identified the identical visual impacts and mitigation as in the GSEP RSA.

Environmental Setting

The proposed CRS/GSEP Project is located within the Mojave Desert, a sub-region of the Sonoran Desert. The Mojave Desert is a landscape typical of the basin and range physiographic province of which it is part, with small, rocky mountain ranges with jagged peaks alternating with talus slopes and desert floor. Flat basins form broad flat expanses of barren plains typified by low scrub vegetation and expansive views. Dark browns and garnets are the dominant mountain hues, although blues and purples prevail as viewing distance increases. In contrast, lighter brown and tan soils dominate

the desert floor, sparsely dotted with the grey-green of Sonoran creosote bush and golden bursage scrub vegetation.

The project site is located in the center of the Chuckwalla Valley, with the McCoy Mountains to the east, Palen Mountains to the north, Mule Mountains to the southeast, Little Chuckwalla Mountains to the south, and Chuckwalla Mountains to the southwest. This is a highly visible landscape, affording wide, panoramic views of long duration and depth. Flat desert plains combine with sparse vegetation to allow distant views of mountain ranges that form a backdrop. Due to distance and topography the nearest communities, Blythe and Desert Center, do not have views of the project site.

The CRS/GSEP Project area is located on, and surrounded by, land managed by BLM as part of the California Desert Conservation Area (CDCA). This designation imparts a High rating for Viewer Sensitivity, using the BLM system, for all lands within the CDCA. Nearby areas that are especially visually sensitive include: the Palen/McCoy, Little Chuckwalla, and Chuckwalla Wilderness Areas as well as the Palen Dry Lake and Desert Lily Sanctuary Areas of Critical Environmental Concern (ACECs).

Interstate 10 is the visually dominant man-made feature in the area. Other distinct features include Chuckwalla Valley State Prison and Ironwood State Prison which are visible but visually very subordinate from I-10. Approximately one to three miles to the south of I-10, there are Western Area Power Administration (WAPA) and SCE transmission lines and substations within BLM's Utility Corridor K (GSEP 2009a). The Devers-Palo Verde transmission line runs east to west roughly one to 3 miles south of the highway but remains largely visually subordinate from the highway within most of the Chuckwalla Valley. Despite these man-made features the natural setting predominates and the existing landscape of the Chuckwalla Valley appears relatively intact, dominated by vast expanses of dry lake and scrub-covered valley floor, and vivid mountains behind them. The project visual setting is described in detail in Section C.12.4.1 of the GSEP RSA (CEC 2010j).

CRS Expansion and Gen-Tie Connection

The proposed CRS 45-acre expansion area, gen-tie connection and underground telecom line would be located at the southeastern end of Palo Verde Mesa adjacent to the existing DPV No. 1 Transmission Line (TTEC 2010p). The proposed site is on BLM lands characterized by open, flat and sparsely vegetated terrain with short grass and low growing shrubs of muted colors. Looking south towards the site from I-10 near the Mesa Verde (Nicholls Warm Springs) residential community, the proposed substation and gen-tie connection would be approximately 4 miles away. The surrounding area is predominantly flat desert with widely scattered vegetation and four-wheel drive vehicle trails. The existing H-frame transmission structures are in the background and almost completely blend in the blue-grey Palo Verde Mountains (CPUC/BLM 2006, p.4.11-10).

Telecommunications System

The proposed telecommunication system would consist of a fiber-optic line strung along the transmission towers, and a redundant buried line. Both lines would extend along the full length of the GSEP linear corridor, from the proposed site footprint to the proposed CRS footprint. The exact location of the telecom trench is unspecified. However, the

telecom line could be easily added to the linear corridor utility trench, whose visual resource impacts and proposed mitigation is discussed in detail in the GSEP RSA.

Looking at the proposed route of the GSEP linear corridor/telecom line towards the south from I-10, the existing wooden poles from the Blythe-Eagle Mountain 161-kV line and lattice structures of the SCE 500 kV DPV No. 1 transmission line are visible against the blue-gray Chuckwalla Mountains in the background. The major elements in this view are the white buildings and white water tower of the Chuckwalla and Ironwood State Prisons set in the open expanse of the flat, open desert land in the foreground/ middleground with the wood pole line and 500 kV lattice structures in the foreground/ middleground. The mountains in the background provide to some extent a visual interest, but the visual variety of the open space and stark visual contrasts of the state prison facilities detract from the overall level of scenic quality (CPUC/BLM 2006, p. 4.11-11).

Looking towards the north from the Wiley Well Bridge over I-10, the proposed route of the GSEP linear corridor/telecom line would be visible with the Chuckwalla Valley in the foreground and middleground, and Palen Mountains in the background. Overall visual quality of the flat plain landscape is considered moderate since the landscape character, even more than that of Ford Lake, is typical of the region and lacking in vivid elements. At this distance the sloping alluvial bajadas at the foot of the mountains are less distinct and prominent than from nearer viewpoints. Visual quality of the Palen Mountains in the background however, is moderately high due to their vivid, highly intact character, dramatic jagged vertical form and line, and prominent, defining presence within the overall view. The visual foreground seen from the rest area has a moderately high level of intactness and unity. Small, wooden H-frame poles can be seen in the foreground, but remain visually subordinate due to their small scale and dark color.

Impacts

Staff analyzed visual resource-related information and concluded that the proposed CRS/GSEP Project, with all staff recommended conditions of certification, would have adverse but less-than-significant visual impacts.

CRS Expansion and Gen-Tie Connection

The CRS substation, its proposed expansion, and the associated gen-tie connection would appear as an assemblage of complex, geometric forms with vertical to diagonal lines. Although the structures would exhibit an industrial character similar to the existing DPV No. 1 transmission line, the substation and gen-tie structures would be more numerous and would increase the overall structural complexity at this location. The resulting visual contrast for form and line would be moderate in the context of the existing infrastructure. The overall level of change would also be moderate. Although the substation would not repeat the basic elements of the existing natural features in the landscape, it would repeat the characteristics of the existing transmission lines and it would not dominate the view of the casual observer. Additionally, the substation would have the potential to cause light and glare impacts if night lighting is not properly controlled.

In their analysis of the CRS substation (original footprint), the CPUC and BLM staff concluded that the moderate visual impacts resulting from the construction and operation of the substation would be adverse but less than significant (CPUC/BLM 2006, p. D.3-65). The additional 45-acre expansion would have similar visual impacts. Connection of the GSEP tie-line to the CRS would not be expected to create visual impacts given the surrounding substation structure and transmission lines.

Telecommunications System

Telecom line construction actions would be short-term and visual impacts from construction equipment would be minor compared to construction of the CRS substation and GSEP Project. No visual impacts would remain following construction. Connection the telecom facilities to the CRS would not be expected to create visual impacts given the surrounding substation structure and transmission lines.

Cumulative Impacts

Previous analyses of cumulative visual impacts in the project area have resulted in differing opinions. The authors of the Blythe Energy Project Transmission Line Energy Commission Revised Staff Assessment (2006) conclude that the distance and angle of view of the proposed BEPTL and other transmission lines from I-10 viewers, visual awareness of the transmission lines would be low and therefore there would not be a significant cumulative visual impact (CEC 2006 p. 4.11-16).

In contrast, the authors of the GSEP RSA and the DPV No. 2 Transmission Line FEIR/FEIS concluded that the addition of two proposed transmission lines in the same general corridor as the existing Devers-Palo Verde line would have the potential to raise the cumulative level of contrast and dominance of the overall transmission corridor to a level that begins to attract attention and detract from the intactness and visual quality of the viewshed as seen from I-10. Specifically, impacts would include an increase in industrial character, structure prominence, and view blockage.

The DPV No. 2 Transmission Line Project, through its proposed transmission line, would contribute incrementally to that increase in dominance of transmission lines within the Chuckwalla Valley. The proposed mitigation, which would essentially require the consolidation of separate transmission corridors to the greatest extent possible, would reduce cumulative visual impacts, but not to a less than significant level.

Similarly, the anticipated operational visual impacts of the CRS/GSEP Project in combination with past and foreseeable future projects in the local viewshed of Chuckwalla Valley are considered potentially significant from some sensitive viewpoints, particularly within the Chuckwalla Wilderness. Anticipated cumulative operational impacts of past and foreseeable future region-wide projects in the southern California desert are considered cumulatively considerable and potentially significant.

Impact Minimization Measures

With the inclusion of the following recommended mitigation measures or similar, potential visual impacts related to proposed project would be less than significant:

- **VIS-1** Surface Color Treatment of Non-Mirror Structures: to lower color contrast of the proposed transmission poles and blend with the visual background;

- **VIS-2** Temporary and Permanent Exterior Lighting: low glare, not visible from a distance.
- **VIS-3** Realignment and Visual Mitigation of Proposed Transmission Line: to reduce the contrast of transmission towers by use of lattice-style towers, and to minimize the portion of the ROW within foreground viewing distance of I-10 by ½-mile setbacks from the highway.
- **VIS-5** Visual Mitigation and Revegetation of Staging Area: to minimize the visual prominence of the proposed staging area to visitors at Wiley's Well Rest Area on I-10; and,
- **VIS-6** Reduction of Form, Line, and Texture Contrast: To the extent possible, the project owner will use applicable design principles to reduce the visual contrast of the project with the characteristic landscape.

D.5.3.11 WORKER SAFETY

Environmental Setting

Industrial facilities generally pose worker safety concerns. These include exposure to loud noises, moving/falling equipment, trenches, confined space entry and egress, chemical spills, hazardous waste, fires, explosions, and electrical sparks and electrocution. Workers may experience falls, trips, burns, lacerations, and other injuries.

The CRS/GSEP Project would be located on an approximately 140 acre parcel of land located approximately 1.5 miles south of Interstate 10 and 4.75 miles east of Wileys Well Road, in the County of Riverside, California. The expanded substation would be generally located in the eastern portion of the parcel. The underground telecom line would be would be co-located with the GSEP natural gas pipeline and access road to the existing Blythe Energy Transmission Line (BETL), and from that point, the line would be within the right of way of existing BETL poles until it reaches the CRS. The CRS/GSEP Project is located entirely on undisturbed federal land administered by the BLM.

Fire support services would be under the jurisdiction of the Riverside County Fire Department (RCFD). RCFD fire stations have full-time staff with a minimum of three personnel, including paramedics. The nearest stations are #45 Blythe Air Base and #49 Lake Tamarisk in Desert Center, with estimated response times of 23 minutes and 35 minutes, respectively. There are also fire stations manned by the City of Blythe and Chuckwalla Valley State Prison. The nearest hazardous materials team is located in Palm Desert (90 miles to the west), with a response time of 1.5 to 2 hours (CEC 2010j).

Construction workers may be at risk of exposure to Coccidiodomycosis (known as Valley Fever). Soil disturbance (primarily of previously undisturbed lands) could release the spores of the fungus Coccidiodes immitis, which can be inhaled and affect the lungs with potentially severe consequences. Riverside County has approximately 50 cases of Valley Fever per year, with nine reported deaths between 2005 and 2008. This compares to Kern County with a recent average of 1,000 cases per year.

The site also has the potential to contain unexploded ordnance (UXO) and soil contaminated with hazardous materials.

Impacts

Workers could be exposed to hazardous materials that are already present (i.e. contaminated soil and UXO) or that are used in construction. Soil excavation for substation grading and trenching for the telecom cable have the potential to release the fungus that causes Valley Fever.

Hazardous materials used during construction would be stored, handled and used in accordance with applicable regulations. Material Safety Data Sheets would be made available at the construction site for all crew workers. Also, safety devices such as traveling grounds, temporary grounding grid/mats around stringing equipment, guard structures, and radio equipped public safety roving vehicles and linemen would be in place prior to the initiation of wire-stringing activities.

Due to the scale of the proposed components, a significant impact on emergency and fire response is not expected.

Cumulative Impacts

The RCFD may not be adequately equipped to respond in a timely manner to fire, hazmat, rescue, and EMS emergencies for the proposed CRS/GSEP Project components in addition to the GSEP and other large solar projects. Construction and operation of these projects would present short and long-term adverse impacts on services. The Worker Safety and Fire Protection section in the GSEP RSA discusses that the significant impact could be mitigated under measures to increase resources for the fire department.

Impact Minimization Measures

SCE mitigation measure HAZ-1 and GSEP RSA condition **WASTE-5** reduce the potential for worker exposure to hazardous materials and UXO, respectively. The GSEP RSA section on Worker Safety and Fire Protection includes **WORKER SAFETY-8**, to minimize construction workers to VF exposure.

SCE measures HAZ-2 through HAZ-5 contain steps for fire prevention and response, and hazardous waste and materials handling. Under HAZ-6, the substation would be grounded to limit electric shock and surges that could ignite fires. The GSEP Worker Safety and Fire Protection section also includes measures that would mitigate any impacts to worker safety to less than significant.

D.5.4.0 SUMMARY OF CONCLUSIONS

Energy Commission staff has prepared this TSE Appendix to the GSEP RSA to discuss reasonably foreseeable actions needed to interconnect the 250 MW GSEP to SCE's existing DPV 500 kV transmission line. The reasonably foreseeable actions include: 1) expanding the proposed and already permitted CRS: 2) looping the DPV 500 kV line and terminating the new Devers-Colorado River transmission line into the CRS; 3) modifying existing 220 kV structures; 4) constructing a distribution line for CRS light and

power; 5) connecting the last tower of the GSEP tie-line to the CRS; and 6) connecting telecom system components between the GSEP and the CRS, including an underground telecom line which would follow the GSEP gen-tie. Only the CRS substation expansion, GSEP tie-line connection, and telecom facilities are evaluated in this Appendix since the other elements have already been analyzed and permitted.

The CRS expansion and connection of GSEP gen-tie and telecommunications facilities would be built by SCE and would be fully evaluated in a future environmental document prepared in response to an application to the BLM for a lease to construct the CRS. Because no application has yet been submitted and the SCE project is still in the planning stages, the level of impact analysis and the conclusions presented below are based on available information.

The proposed CRS/GSEP interconnection project, especially expansion of the Colorado River Substation, has the potential to result in significant direct, indirect and cumulative impacts to biological resources. Mojave fringe-toed lizards and a number of other sensitive sand dune-dependent species are likely to be directly impacted by expansion of the CRS. Even if the substation expansion avoided direct impacts to these sensitive sand dune species, indirect impacts are also likely to occur. The proposed expansion and associated drainage modifications could result in direct and indirect impacts to state waters. Without project-specific information, staff cannot address the feasibility of implementing effective avoidance measures as a means of reducing impacts below the level of significance. Impacts from other project components are likely to be relatively small; staff's proposed conditions of certification would likely be sufficient to reduce impacts to biological resources to less than significant levels.

Staff was not provided any cultural resources information regarding the proposed CRS expansion/gen-tie connection or buried telecom line. Construction of the CRS/GESP project is likely to result in direct and indirect impacts to cultural resources. Project impacts, when combined with impacts from past, present, and reasonably foreseeable projects, may contribute to cumulatively considerable adverse impacts for cultural resources at both the local I-10 Corridor and regional levels. Future cultural resources surveys and analyses conducted by the CPUC and BLM as part of their compliance with CEQA, NEPA, and Section 106 of the National Historic Preservation Act (NHPA) would need to address potential impacts to cultural resources in the CRS/GESP Project footprint.

Impacts to geologic resources would potentially occur from ground disturbance during construction. Direct surface displacement by faulting of any portion of the proposed facility is not expected. The CRS/GSEP Project facilities would be engineered to withstand potential ground shaking in accordance with the CPUC's General Order 95 and would meet relevant seismic requirements. The project is located on relatively level ground and in an area of low seismicity. No impact is expected from landslides. With proper construction practices there should be no notable erosion or transport of sediment from the site. Impacts to paleontological resources, if present, would be potentially significant. No impacts to mining would occur. The proposed CRS/GSEP Project would not result in cumulative impacts. Mitigation measures would reduce potential geological and paleontological impacts below the level of significance.

Land use impacts of the proposed CRS/GSEP Project would be less than significant. The project would comply with applicable land use plans, ordinances, regulations, policies and reasonably foreseeable land uses. Given the project's location on BLM lands, compliance with the standards of the Riverside County zoning ordinance is not required. The proposed CRS/GSEP Project would not require a BLM plan amendment. The project would not impact any agriculture or rangelands, recreation and wilderness areas, areas designated by BLM as Herd Areas or Herd Management Areas or divide an existing community. The CRS/GSEP Project may combine with other past and reasonably foreseeable future projects to reduce scenic values of wilderness areas and recreational resources in the Chuckwalla Valley and southern California desert region and therefore, would result in a significant and unavoidable cumulative land use impact in this regard.

The CRS/GSEP Project would generate noise above ambient levels from construction of the substation expansion, gen-tie connection, and installation of the telecommunication cables. There are no occupied residences or noise sensitive receptors surrounding the proposed CRS/GSEP Project locations. Project noise is not anticipated to exceed any County or CEQA significance thresholds. Impacts from vibration are not expected. Compliance with LORS would protect construction, operation and maintenance workers from noise hazards. No cumulative impacts would occur.

The CRS/GSEP Project would not cause a significant adverse direct, indirect, or cumulative impact to the study area's population, housing, schools, law enforcement, emergency services, hospitals, and utilities. No minority and low-income populations would be disproportionately impacted.

Soil related issues in the CRS/GSEP Project area include a high potential for wind and water erosion of soils disturbed during construction. Disturbed soils lack their normal, although limited, natural vegetative cover. If ephemeral drainages are present, erosion of disturbed areas could transport/deposit sediment downstream within an ephemeral drainage, which would result in a significant adverse impact to water quality. Further, inadvertent construction-related discharges of petroleum hydrocarbons or other contaminants could potentially result in significant impacts to water quality in surface flow if improperly contained. The proposed CRS/GSEP Project area is not located within a 100-year floodplain and therefore would not exacerbate flood conditions or substantially impede flood flows. Impacts to groundwater would be less than significant and no mitigation is recommended. Impacts would not be cumulatively considerable. Mitigation measures would reduce potential soil and water resources impacts below the level of significance, thereby eliminating the projects contribution to cumulatively considerable impacts.

Construction of the CRS expansion, gen-tie connection, and telecommunications system would add a minor amount of vehicles to I-10 and would not impact the highway's capacity. Traffic coordination and control plans prepared for the I-10 projects would reduce any local traffic exacerbation.

No impacts are expected from the use of hazardous materials or from waste generation. Compliance with LORS would ensure proper handling and disposal of materials. There

is sufficient capacity at approved disposal facilities to accept CRS/GSEP waste. Mitigation measures would reduce impacts if UXO or existing contamination is present.

In their analysis of the CRS substation (original footprint), the CPUC and BLM staff concluded that the moderate visual impacts resulting from the construction and operation of the substation would be adverse but less than significant. The additional 45-acre expansion would have similar visual impacts. Connection of the GSEP tie-line to the CRS would not be expected to create visual impacts given the surrounding substation structure and transmission lines. No visual impacts from the buried telecom line would remain after construction. The anticipated operational visual impacts of the CRS/GSEP Project in combination with past and foreseeable future projects in the local viewshed of Chuckwalla Valley are considered potentially significant from some sensitive viewpoints, particularly within the Chuckwalla Wilderness. Anticipated cumulative operational impacts of past and foreseeable future region-wide projects in the southern California desert are considered cumulatively considerable and potentially significant.

Worker safety and public health impacts would be reduced to less than significant levels through compliance with LORS and implementation of mitigation measures, including measures relating to Valley Fever and UXO. The Riverside County Fire Department may not be adequately equipped to respond in a timely manner to fire, hazmat, rescue, and EMS emergencies for the proposed CRS/GSEP Project components in addition to the GSEP and other large solar projects. Construction and operation of these projects would present short and long-term adverse impacts on services but could be mitigated with measures as described in the GSEP RSA.

D.5.5.0 REFERENCES

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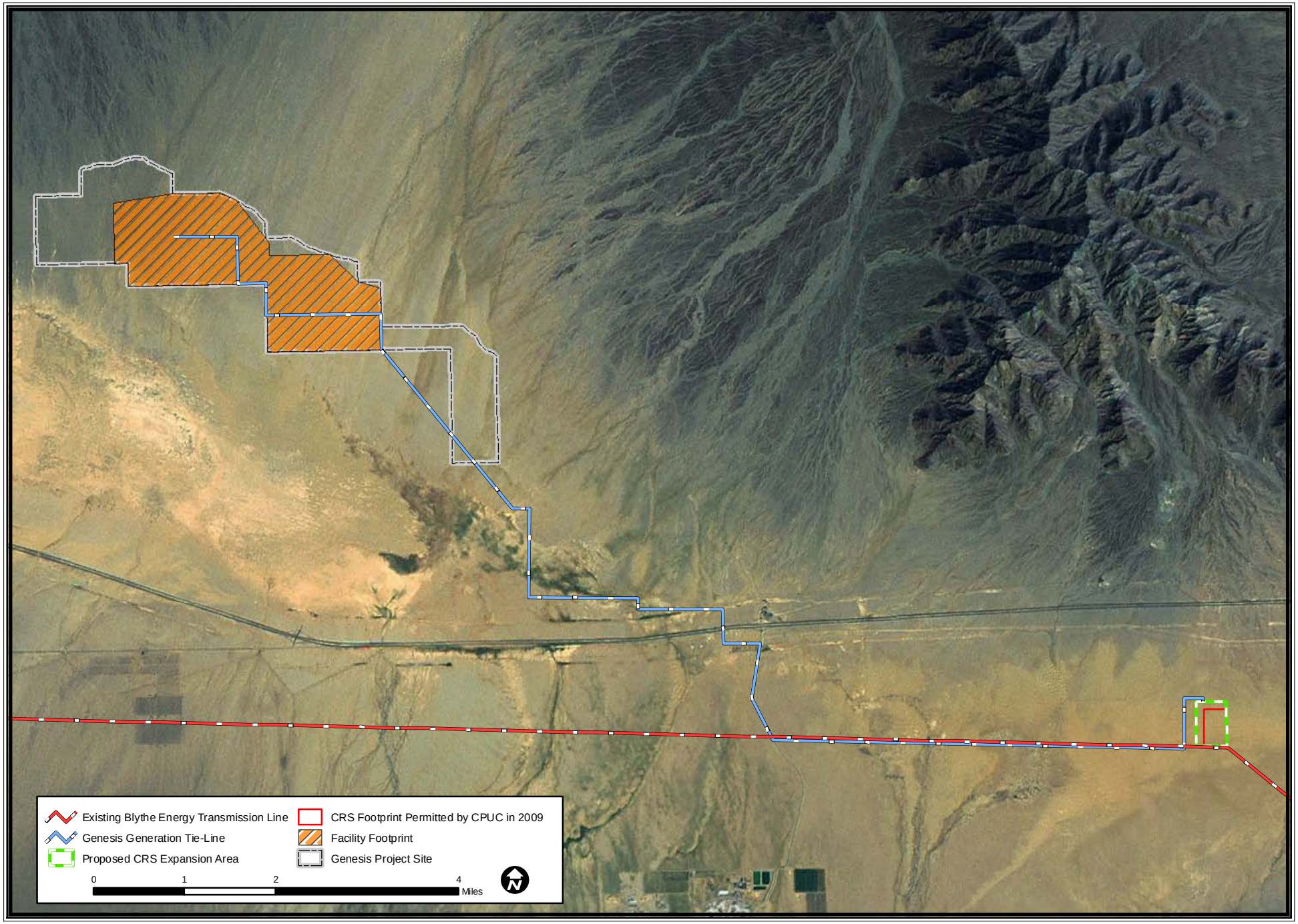
TRANSMISSION SYSTEM ENGINEERING - APPENDIX A - FIGURE 1

Genesis Solar Project - Genesis Generation Tie in Colorado River Substation



TRANSMISSION SYSTEM ENGINEERING

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Tetra Tech, Aspen Environmental

LIST OF PREPARERS

GENESIS SOLAR ENERGY PROJECT
LIST OF PREPARERS

Executive Summary ..... Mike Monasmith

Biological Resources..... Amy Golden, Sara Keeler, Susan Sanders

Cultural Resources..... Elizabeth A. Bagwell Ph.D. RPA, Beverly E. Bastian

Socioeconomics .....Scott Debauche

Transmission System Engineering..... Suzanne Phinney

Project Assistant ..... .Maria Santourdjian

WITNESS QUALIFICATIONS AND DECLARATIONS

DECLARATION OF
Mike Monasmith

I**,** Mike Monasmith, declare as follows:

1. I am presently employed by the California Energy Commission in the Siting, Transmission and Environmental Protection Division as a Senior Project Manager.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on the **Executive Summary** for the **Genesis Solar Energy Project RSA Supplement** based on my independent analysis of the Application for Certification, and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated:_____ Signed:_____

At: Sacramento, California

J. MIKE MONASMITH

3308 Hunnicutt Lane
Sacramento, CA 95821
916-412-8589

WORK HISTORY:

CALIFORNIA ENERGY COMMISSION, Sacramento
Siting, Transmission & Environmental Protection
Project Manager (2007 – present) --

CALIFORNIA ENERGY COMMISSION, Sacramento
Associate Public Adviser (2003 - 2007) --

CALIFORNIA RESOURCES AGENCY, Sacramento
Special Assistant to the Secretary, Policy & Planning (2003) --

CALIFORNIA DEMOCRATIC PARTY, Los Angeles
Director of Communications (2002) --
Coordinated Campaign, Gore/Lieberman Deputy Director (2000) --
Press Secretary, Coordinated Campaign, Californians for Feinstein (1994) --

U.S. CONGRESSWOMAN JANE HARMAN, Washington DC
Chief of Staff (1997 - 1998) --
Deputy Campaign Manager, Harman for Governor (1998) --
Political Director (2001) --

STATE CONTROLLER KATHLEEN CONNELL, Los Angeles
Chief Deputy Controller (2000 - 2001) --
Assistant Deputy Controller, External Affairs (1995 - 1996) --

VERIZON COMMUNICATIONS, Thousand Oaks, CA
Director, Los Angeles Government Affairs (1999 - 2000) --
Company's Registered Lobbyist for L.A. City Council / L.A. Board of Supervisors

U.S. DEPARTMENT OF THE INTERIOR, Washington DC
Special Assistant, Assistant Secretary for Water & Science, (1997) --

CLINTON/GORE '96 GENERAL COMMITTEE, Los Angeles
California Deputy State Director (Southern California Political Lead) (1996)
California Desk Co-Director, Presidential Inaugural Committee (1997)

SHEILA JAMES KUEHL FOR ASSEMBLY, Los Angeles
Campaign Manager / Candidate Spokesman (1994)

LOS ANGELES MAYOR RICHARD RIORDAN, Los Angeles
Deputy Press Secretary / Mayoral Assistant / Advance Co-Lead (1993-94)
Deputy Field Director / Deputy Director, Advance (**Riordan for Mayor** 1993)

DEMOCRATIC PARTY OF ORANGE COUNTY, Santa Ana
Office Manager / Chief Assistant, Chairman Adler (1991-92)

UNIVERSITY OF CALIFORNIA, Santa Cruz
Federal Work-study Program Manager, UCSC Student Employment (1990 – 1991)

ICICLE SEAFOODS, Inc., Seward, AK
Production Supervisor, Towa Eggroom (Summers, 1988-1991)

EDUCATION:

University of California at Santa Cruz (College VIII)
B.A., Environmental Studies/Politics (Policy & Planning), 1990
(Thesis Honors: Resource Management, Tongass National Forest, Alaska)

DECLARATION OF
Amy Golden

I, **Amy Golden**, declare as follows:

1. I am presently employed by The California Energy Commission in the **Siting Office** as a Biologist.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Biological Resources**, for the **Genesis Solar Energy Project**, based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 7/1/10 Signed: _____

At: _____

Amy W. Golden

Employment History

California Energy Commission

Planner II, Staff Biologist *11/2009 to present*

As a Staff Biologist with the Energy Commission, Ms. Golden analyzes the biological resource components of energy facilities siting applications to assess resource impacts, develop mitigation plans, and to evaluate compliance with applicable local, state, and federal laws, ordinances, regulations, and standards. In addition, she works closely with biological resource protection and management agencies and subject matter experts to ensure input into the Energy Commission and facility licensing process.

Foothill Associates

Wildlife Biologist *03/2005 to 10/2009*

While working as a private environmental consultant with Foothill Associates as a Wildlife Biologist, Ms. Golden assisted with ESA Section 7 Biological Assessments and Clean Water Act 404 permit applications primarily for private residential and commercial development projects. She performed field habitat assessments; focused species surveys for reptiles, amphibians, and vernal pool invertebrates; wetland delineations; raptor surveys; and arborist surveys. Ms. Golden performed the biological impact analysis for several parks master planning and proposed specific plan area projects. Amy also assisted with the preparation of riparian habitat mitigation plans pursuant to Section 1600 of California Fish and Game Codes and Wetland Mitigation Plans in support of Clean Water Act Section 404 Army Corps permit issuance and compliance. Ms. Golden also served as the biological lead on many CEQA projects and performed the biological field work and prepared the biological resources section for several CEQA documents.

Analytical Environmental Services

Biologist *09/2004 to 02/2005*

While with the environmental consulting firm Analytical Environmental Services as a Staff Biologist, Amy assisted with the preparation and analysis of many NEPA documents primarily for tribal projects. Ms. Golden prepared biological impact analyses and coordinated with local resource agencies on the development of mitigation plans to minimize impacts to sensitive biological resources. Amy also performed field biological assessments, wetland delineations, elderberry shrub impact assessments, and focused plant and wildlife surveys.

The Nature Conservancy

Biologist *04/2004 to 07/2004*

Ms. Golden worked on a field crew as a seasonal field biologist on a long-term avian monitoring project with The Nature Conservancy to monitor the use of montane meadows and forest edges by birds in the Sierra Nevada mountain range. Ms. Golden performed avian point counts utilizing the Variable Point Count method to document avian bird diversity in the Tahoe National Forest. Amy

operated a GPS unit, recorded all birds observed based on visual surveys and auditory calls and input all collected data into a Microsoft Excel database.

Sapphos Environmental, Inc.

Wildlife Biologist *05/2002 to 03/2004*

As a Wildlife Biologist with Sapphos Environmental, Inc., Ms. Golden performed field habitat assessments in support of biological technical analyses and reports. Amy assisted with dry desert wash delineations, desert tortoise habitat assessments and focused surveys, Incidental Take Permit applications, and several CEQA biological resources sections. Amy coordinated with local resource agencies on the development of appropriate mitigation plans and land acquisitions on several Section 7 ESA permitting projects.

EDUCATION

Environmental Forest Biology — *Bachelor of Science*
State University of New York, College of Environmental Science and Forestry — *May 2000*

Field Ecology
University of California Riverside Extension — *Certificate in Field Ecology*, *February 2004*

Veterinary Science Technology
State University of New York at Delhi — *Associate of Applied Science*, *May 1997*

DECLARATION OF
Sara Keeler

I, **Sara Keeler**, declare as follows:

1. I am presently employed by the California Energy Commission in the **Environmental Protection Office** of the **Energy Facilities Siting Division** as a **Planner II**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **Biological Resources** for the Genesis Solar Energy Project based on my independent analysis of the application and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: June 29, 2010 Signed: SKeeler

At: Sacramento, California

Sara M. Keeler

Employment History

California Energy Commission

Planner II, Staff Biologist *12/2009 to present*

As a staff biologist with the Energy Commission, Ms. Keeler analyzes the biological resource components of energy facilities siting applications to assess resource impacts, develop mitigation, and to evaluate compliance with applicable local, state, and federal laws, ordinances, regulations, and standards. This requires working closely with biological resource protection and management agencies, subject matter experts, and Energy Commission consultants as well as with other Energy Commission staff to provide the best available information is included in staff analyses.

California Department of Transportation, District 3

Associate Environmental Planner/Environmental *11/2007 to 12/2009*

Ms. Keeler's primary duties with Caltrans were to coordinate and complete environmental documents to satisfy CEQA, NEPA, regional, and permitting requirements, and act as the Project Biologist on various transportation-related projects in California.

Entrix, Inc.

Senior Staff Scientist/Staff Scientist *01/2005 to 11/2007*

While with the environmental consulting firm Entrix, Inc., Ms. Keeler specialized in California wildlife and floristics studies. She worked throughout California including in the Lake Tahoe Basin, Great Basin, Central Valley, Sierra Nevada, in coastal California, and desert areas. Projects while at Entrix included biological resource field studies such as habitat assessments, protocol-level surveys for special-status plants and animals, wetland delineations, and riparian surveys; project, task, and budget management; and writing biological resources sections of a variety of documents including documents to satisfy NEPA and CEQA requirements, environmental assessments, and existing conditions reports.

USDA, Forest Service, Pacific Southwest Research Station

Biological Sciences Technician *05/2001 to 09/2002*

Ms. Keeler conducted breeding bird surveys and vegetation inventories and assessments on a breeding bird survey crew in the Sierra Nevada. This included conducting surveys using a variety of techniques including tree-climbing (ascenders, 3-point climbing, Swedish ladders), auditory surveys, and vegetation sampling.

EDUCATION

Biological Sciences (Evolution and Ecology) *B.S (High Honors)*
University of California, Davis *June 2004*

DECLARATION OF
Susan D. Sanders

I**, Susan D. Sanders,** declare as follows:

1. I am presently under contract with Aspen Environmental Group to provide environmental technical assistance to the California Energy Commission. Under Contract No. 700-08-001, I am serving as a Biological Resource Specialist and Project Manager to provide Peak Workload Support for the Energy Facility Siting Program and for the Energy Planning Program.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **Biological Resources** for the **Supplemental Staff Assessment** for the **Genesis Solar Energy Project** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: June 29, 2010 Signed: _____

At: Nevada City, California

Susan Sanders Biological Consulting

12213 Half Moon Way
Nevada City, California 95959
Phone: (530) 477-7415 Fax: (530) 477-7580
ssanders55@comcast.net

RESUME OF SUSAN SANDERS

EDUCATION

Ph.D.	Zoology	University of California, Davis (1983)
M.A.	Zoology	University of California, Davis (1979)
B.A.	Zoology	University of California, Berkeley (1976)

PROFESSIONAL AFFILIATIONS/CERTIFICATIONS

Wildlife Society, Sacramento-Shasta Chapter
Sierra Nevada Willow Flycatcher Working Group
Certified by California Unified Certification Program as DBE/WBE firm (UCP # 25204)

CONTINUING EDUCATION (UC Davis, University Extension)

Threatened and Endangered Reptiles and Amphibians of Northern California
Wetlands Regulations, Impacts, and Mitigation
Endangered Species: Resources, Law, and Potential Solutions
Resolving Endangered Species Conflicts: Practical Approaches to Problem Solving

REGULATORY COMPLIANCE EXPERTISE in coordination with state, federal, and local agencies in the environmental review process for projects regulated by the California Environmental Quality Act, National Environmental Policy Act, Federal and State Endangered Species Acts, National Fish & Wildlife Coordination Act, Clean Water Act, and California Coastal Act. Also experienced in providing technical support and agency coordination for license and permit applications.

TECHNICAL EXPERTISE in surveys for threatened and endangered wildlife species; biological inventories; habitat management plans; raptor surveys; wildlife habitat assessment; mitigation monitoring; expert testimony, constraints analysis; sensitive species research. Prepared Biological Assessments for endangered, threatened, and candidate species, and conducted field surveys and literature reviews for willow flycatchers, tricolored blackbirds, Swainson's hawks, burrowing owls, California spotted owls, San Joaquin kit fox, bald eagles, valley elderberry longhorn beetles, and many other special-status species. Conducted surveys for raptor species of special concern, including white-tailed kite, northern goshawk, and Cooper's hawk.

PROJECT MANAGEMENT EXPERIENCE on large and complex projects, including a two-year survey of 11,000 acres in the Plumas National Forest for a proposed land exchange, involving supervision of eight technical specialists and subconsultants. Responsible for overseeing numerous transportation and revegetation projects and mitigation monitoring programs which involved budget, personnel, and subconsultant management, agency and client coordination, and preparation of technical reports. Managed long-term (five-year) revegetation/mitigation monitoring projects with annual reporting requirements.

CONSULTING EXPERIENCE (1982 - 2007)

CALIFORNIA ENERGY COMMISSION TECHNICAL ASSISTANCE

Currently assisting the CEC in evaluating the environmental aspects of new power plant applications throughout the state, and also providing technical expertise as an avian specialist. I have completed or am currently involved in the following projects:

- **California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development in California:** Currently **s**erving as author and coordinator for a statewide effort to develop science-based protocols for pre-and post-construction monitoring to assess the effects of wind energy development on birds and bats. Worked closely with CEC and California Department of Fish and Game staff, coordinated the efforts of an eight-member Science Advisory Committee, helped organize public workshops, worked with wind energy developers, and non-governmental organizations on this collaborative guidelines effort.
- **Pastoria Energy Facility Expansion**. Worked with CEC staff in reviewing the Application for Certification and associated reference material, prepared Data Adequacy Form, Data Request, Preliminary and Final Staff Assessment.
- **San Francisco Energy Reliability Project**: Reviewed the Application for Certification and related information material, met with CEC staff and United States Fish and Wildlife Service regarding endangered species issues, prepared and Final Preliminary Staff Assessment.
- **Black Mountain Wind Energy and 69kV Transmission Line Project**: Acting as CEC's avian specialist, reviewed the extensive literature of effects of wind development on avian populations, met with the Public Interest Energy Research staff, and prepared a comment letter on behalf of CEC for the Notice of Preparation for this project.
- **Notice of Preparation Review for Proposed Wind Energy Project:** Provided comment letters on behalf of CEC for the Notice of Preparation for Shiloh II Wind Plant Project (Solano County), and WECS 20 Project (City of Desert Hot Springs).

LITIGATION SUPPORT/EXPERT WITNESS

El Portal Road Improvement Project. Conducted field surveys and reviewed the Biological Assessment, Environmental Assessment/FONSI for the El Portal Road Improvement Project litigation (Sierra Club *et al. vs.* National Park Service). Prepared declarations and response to defendants opposition briefs, and provided other technical assistance to project attorneys. (Client: Mariposans for Environmentally Responsible Growth and Sierra Club).

Merced River Plan. Conducted field surveys and reviewed the Merced Wild and Scenic River Comprehensive Management Plan and Final Environmental Impact Statement (Sierra Club *et al. vs.* National Park Service). Prepared declarations and response to defendants opposition briefs, and provided other technical assistance to project attorneys. (Client: Friends of Yosemite Valley and Sierra Club).

Lower American River Instream Flows. Conducted original research and provided declarations on the effects of reduced instream flow to wildlife for the Friends of the American River v. EBMUD, Lower American River. Provided technical assistance to project attorneys,

prepared declarations, and provided expert testimony before the State Water Resources Control Board. (Client: Sacramento County and Friends of the American River Parkway).

Putah Creek v. Solano Irrigation District. Litigation support and expert testimony regarding wildlife/fishery impacts of reduced flows in Putah Creek. Provided depositions, declarations, expert witness testimony, and other litigation support (Client: Putah Creek Council).

CEQA/NEPA Documents. Prepared biological resource sections of Environmental Impact Reports/Statements, Initial Studies, and Environmental Assessments for numerous commercial and residential developments, redevelopment projects, transportation projects, dams, and other water projects throughout northern California. Conducted wildlife and plant community surveys, habitat assessments, agency contacts, data analysis and report preparation. Secured 1602 Streambed Alteration Agreements from California Department of Fish and Game, Section 404 Permits from U.S. Army Corps of Engineers, and 401 Permits from Regional Water Quality Control Board. Some representative projects include:

- Pacific Bell Route 101 Fiber Optic Cable, Kern County (PAR Environmental Services, Inc. [PAR]);
- Higgins Corner Marketplace, Nevada County (FHK Development);
- Hinkle Creek Nature Area Biological Inventory/Impact Analysis, Folsom (PAR);
- Willow Flycatcher Surveys, Lake Isabella Project, Kern County (Jones & Stokes);
- Biological Resources Survey, Galilee and TRC Parcels, Roseville, Placer County (PAR);
- Burrowing Owl Impact Analysis/Mitigation Monitoring, Northpointe, Sacramento County (PAR);
- Laguna Creek Interceptor and Sewer Alignment Constraints Study, Sacramento County (PAR);
- Marin Public Safety and Emergency Radio System Project, Marin County (Cord Communication)
- Biological Studies for Endangered Species Compliance, Isabella Dam, Kern County (PAR);
- Granite Quarry, Placerville (The Bedrock Group);
- Pacific-Bell Rocklin Central Dialing Station, Rocklin, Placer County (PAR);
- Whitney Oaks Raptor Surveys, Placer County (Live Oak Enterprises/Pulte Homes);
- Auburn Ranch Subdivision Project, Placer County (Area West Engineers);
- Equestrian Ridge Estates, Placer County (PAR);
- Willow Creek Assessment District Swainson's Hawk Surveys, Sacramento County (PAR);
- Bucks Lake Spotted Owls Surveys, Menasha Corporation, Plumas County (PAR);
- Roseville Water Facilities Project, City of Roseville, Placer County (Geier & Geier Consulting);
- Sugar Bowl Ski Resort Expansion, Placer County (Omni-Means, Engineers/Planners);
- City of Lincoln Waste Water Treatment Plant Expansion, Placer County (City of Lincoln);
- The Heritage at Bickford Ranch, Placer County (Geobotanical Phenomenology);
- South Branch 60 kV Pole Line Project, Roseville, Placer County (PAR);
- Smith-Moulton Pipeline Project, Nevada County (PAR);
- Morada Ranch Annexation, San Joaquin County (Omni-Means);
- Clover Valley Lakes Estates EIR, Placer County (Planning Concepts);
- Turtle Island, Loomis, Placer County (Export International);
- Fort Hunter-Liggett Wildlife Resource Surveys, Monterey County (Jones & Stokes Associates);
- Superconducting Super Collider EIR/EIS, Yolo and Solano Counties (EIP Associates);
- South Lake Tahoe Redevelopment Agency EIR, El Dorado County (Wagstaff & Brady);
- Stanford Ranch EIR, Placer County (Jones & Stokes Associates);
- Northeast Roseville Specific Plan EIR, Placer County, Placer County (Jones & Stokes Associates).
- Teichert/Granite Aggregate Mining Site, Sacramento County (Holliman, Hackard, & Taylor);
- Lower Laguna Drainage Master Plan, Sacramento County (PAR);
- Natomas Ditch Abandonment and Pipeline Construction Project, Sacramento County (PAR);
- Tuolumne River Wildlife Studies for FERC License, Tuolumne County (Holton & Associates);
- Turner Creek Hydroelectric Project, Plumas County (Jones & Stokes Associates);
- Calabazas Creek Flood Control Project, Santa Clara County (Santa Clara Valley Water District).

Transportation Projects. Prepared Caltrans Natural Environment Study Reports, Biological Assessments, Categorical Exemption/Exclusions, Preliminary Environmental Study Forms, and other documentation for bridge replacements, interchange modifications, seismic retrofits, road widenings, emergency storm damage repairs, and other transportation projects in Caltrans Districts 1, 2, 3, 4, 5, 6, and 10. Representative projects include:

- Auburn Boulevard Improvement Project, Citrus Heights, Sacramento County (PAR)
- Valley Drive Bridge Replacement Project, Nevada County (Nevada County DOTS)
- SR 101/Prado Rd. Interchange Improvement Project, San Luis Obispo County, (PAR)
- I-580/Isabel Avenue Interchange Project, Livermore, Alameda County (PAR);
- Gladding Road Bridge Replacement, Coon Creek, Placer County (Planning Concepts);
- Lozanos Road Bridge Replacement, Auburn Ravine, Placer County (PAR);
- Coyote Creek Bridge Replacement Project, Calaveras County (PAR);
- Route 99/Route 120 East Interchange Project, Manteca, San Joaquin County (PAR);
- Route 99/Prado Road Interchange, San Luis Obispo County (PAR);
- Ralston Avenue/Route 101 Interchange, Belmont, San Mateo County (PAR);
- Route 1 Improvement Project, Sand City to Seaside, Monterey County, PEAR (PAR);
- Northeast Area Transportation Plan, Constraints Analysis, Sacramento (PAR);
- Wilbur Avenue Overcrossing Project, Antioch, Contra Costa (PAR);
- Alpine Road Storm Damage Repair, San Mateo County (PAR);
- Pescadero Road Storm Damage Repair, San Mateo County (PAR);
- Route 92 Widening, Half Moon Bay, San Mateo County (PAR);
- Route 99/Hammer Lane Interchange Improvements, Stockton, San Joaquin County (PAR);
- Hammer Lane Widening, Stockton, San Joaquin County (PAR);
- La Gonda Way and Paraiso Drive Bridge Seismic Retrofit, Danville, Contra Costa County (PAR);
- Highway 162 Bridge Storm Damage Repair Project, Sacramento River, Glenn County (PAR);
- Norwood Avenue Reconstruction Project, Sacramento County (Planning Center);
- HOV Lane Construction, US 50, Sunrise to El Dorado Blvd., Sacramento/El Dorado Co. (PAR);
- Dry Creek Bridge Replacement Project, Route 99, Butte County (PAR);
- Ladies Canyon Bridge Storm Damage Repair, Sierra County, (PAR);
- Emergency Storm Damage Repair, Routes 49 and 89, Sierra and Nevada Counties, (PAR);
- Emergency Storm Damage Repair Project for: Route 70/89, Feather River Canyon, Route 20, 147, Plumas, Nevada, and Butte Counties, (PAR);
- Interstate 5 - Benjamin Holt/Hammer Lane Interchange project, San Joaquin County (PAR);
- State Route 113/Interstate 5 Connector Study, City of Woodland, Yolo County, California (PAR);
- Frederickson Road Widening, Antioch, Contra Costa County (May Consulting);
- East Lime Kiln Road Reconstruction Project, Nevada County (PAR);
- Lower Sacramento Road and Bridge Widening, Stockton, San Joaquin County (May Consulting);
- Sierra College Boulevard Widening Project, Roseville, Placer County (PAR);
- State Route 50/Folsom Interchange Improvement Project, Sacramento County (PAR);
- Pico Creek Bridge Replacement Project, Route 1, San Luis Obispo County (PAR)
- Burns Creek Bridge Replacement Project, Route 1, Monterey County (PAR);
- Pajaro River Bridge Replacement Project, Monterey and San Luis Obispo Counties (PAR);
- Route 113 Widening/North 1st Street Improvements, Dixon, Solano County (Planning Concepts);
- Bridgeport School Bridge Replacement Project, El Dorado County (PAR);
- State Route 49 Widening, Auburn, Placer County (PAR);
- Claus Road Bridge Widening, Modesto, Stanislaus County (PAR);
- Interstate 80/Enterprise Boulevard Interchange, City of West Sacramento, Yolo County (PAR).

Nevada County Biological Inventories/Habitat Management Plans. Conducted site specific vegetation and wildlife surveys in accordance with Policy 13.2A of the Nevada County General Plan; prepared Management Plans in accordance with Sec. L-II 4.3.3, General Provisions of the July 27, 2000 Zoning Ordinances. Representative projects include:

- Waxman Parcel Biological Inventory, Old Wood Road (Nevada City Engineering)
- Habitat Management Plan for DesJardins Dry Creek Crossing (Cranmer Engineering)
- Gregory Creek Biological Inventory, Truckee (King Engineering)
- Landon Parcel Biological Inventory and Management Plan, Wolf Road (California Survey Company)
- Oslin-Tarkowski Biological Inventory, Peardale (Ms. Jeanette Oslin)
- Jackson Parcel, Purdon Road (Mr.
- Hyatt Property Biological Inventory and Management Plan, Dry Creek (Mr. Mike Hyatt)
- Penn Valley Community Church, Penn Valley (Mr. Keith Brown)
- Chapa-De Health Clinic, Grass Valley (Ms. Elaine. Lieske, Architect)
- Inventory and Management Plan for Agren Pond Project, Penn Valley (Mr. Ray Agren)
- Humboldt Lily Plant Preservation Plan (Sares-Regis Group)
- Moore Property, Chicago Park (American Surveys)
- Callaghan Property, Lake of the Pines (Sylvester Engineering)
- Tracy Property, Duggans Road (Cranmer Engineering)
- Ragsdale Creek Setback Study, Higgins Area (Nevada County Planning Department)
- CDFG 1603 Permit Application, Eskaton Village, Grass Valley (Sares-Regis Group)
- Cedar Ridge Baptist Church Expansion, Cedar Ridge (Cedar Ridge Baptist Church)
- Penn Valley Properties, Penn Valley (Sylvester and Creighton)
- Record Connection Property, Brunswick Basin (Daggett Design)
- Droitcour Property, Wolf Road (Mr. Gerald Stapp)
- Hyepark Estates, near Wolf Road (King Engineering)
- Bartel Property Lake Setback (Nevada City Engineering)
- KLOVE Radio Tower, Banner Mountain (Westower Communications)
- Haas-Menasha Property, Ponderosa Way, Rough and Ready (Cliff McDivitt Surveying)
- Eskaton Village, Grass Valley (Sylvester & Creighton)
- Quist Property, Higgins Corner (Sylvester & Creighton)
- Hobart Mills Industrial Park (Sylvester & Creighton)
- Milhous Ranch, North San Juan (Sylvester & Creighton)
- Extasia Workshop Project, Tyler Foote Crossing Road, San Juan Ridge (Mr. Bruce Boyd, AIA);
- Flynn Property, Retrac Way, Grass Valley (Mr. Martin Flynn);
- McGuire Property, Banner Lava Cap Road, Nevada City (Mr. Kirk McGuire);
- Biological Inventory for 240-acre parcel near Donner Lake (Mr. James Mitchell);
- Brunswick Inn Project, Grass Valley (Sylvester Engineering);
- Lopez Tentative Map, Scott's Flat Road (Sylvester Engineering);
- Sierra Knoll Estates, Higgins Corner (Mr. and Mrs. Steve Joos);
- Smallwood Property, Grass Valley (Mr. Jay Smallwood).
- Harmony Ridge Resort (Sylvester & Creighton)

Land Exchanges. Prepared Biological Assessments/Evaluations for Forest Service land exchanges in the Plumas National Forest. The largest of these was the 11,000 acre Soper-Wheeler Company land exchange, a two-year project requiring management of eight employees and several subconsultants for surveys of rare plants, California spotted owls, northern goshawks, red-legged frogs, and other sensitive species. Other projects include the Crites Mineral Fraction Land Exchange and the Saunders Land Exchange, Plumas National Forest, (PAR).

Mitigation Monitoring. Supervised the design and ongoing monitoring of wetland and sensitive species mitigation projects, including riparian revegetation, vernal pool creation, and mitigation banking. Some projects involved preparation of a Habitat Mitigation and Monitoring Plan, and long-term monitoring efforts (five years plus), as well as preparation of annual reports, and

coordination with US Army Corps of Engineers, US Fish and Wildlife Service, California Department of Fish and Game, California Department of Transportation, and the US Environmental Protection Agency. Projects include:

- Humboldt Lily Mitigation Monitoring, Eskaton Village, Nevada County (Eskaton)
- Dark Horse Mitigation Monitoring, Nevada County (Nevada City Engineering)
- Northpointe, Burrowing Owl Mitigation Monitoring, Sacramento County (PAR)
- Burrowing Owl Mitigation Monitoring, Meadowview, Sacramento County (PAR)
- Wilbur Avenue Overhead Project, Habitat Restoration for Lange's Metalmark Butterfly, Antioch, Contra Costa County, (PAR)
- Swainson's Hawk Nest Monitoring, Garden Highway, Sacramento, Sacramento County (PAR)
- Sierra College Boulevard Riparian Revegetation Monitoring, Roseville, Placer County (PAR);
- Roseville Sanitary Landfill Riparian Revegetation Project, Roseville, Placer County (PAR);
- State Route 99/Calvine Interchange Vernal Pool Vegetation and Fairy Shrimp Mitigation Monitoring, Sacramento County (PAR);
- Potrero Hills Landfill Bird Deterrence Monitoring, Solano County (Global Environmental);
- State Route 50/Folsom Boulevard Improvement Project, Beach Lakes Mitigation Bank (PAR);
- Niblick Bridge Riparian Revegetation and Mitigation Monitoring, San Luis Obispo County (PAR).

TEACHING EXPERIENCE

Lecturer. Biology 10, UCD Zoology Department (1985): Instructor - biology for non-majors.
Lab Coordinator. Zoology 2L, UCD Zoology Department (1983-1984): Trained and supervised teaching assistants, managed introductory zoology laboratories.
Teaching Assistant. UCD Zoology Department (1977-1983): General Zoology, Vertebrate Structure, Introductory Biology.
Outstanding UCD Graduate Teaching Assistant (1983).

PUBLICATIONS

California Energy Commission and California Department of Fish and Game. 2007. *California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development.* Commission Final Report. California Energy Commission, Renewables Committee, and Energy Facilities Siting Division, and California Department of Fish and Game, Resources Management and Policy Division. CEC700-2007-008-CMF.
Beedy, E. C., S. D. Sanders, and D. A. Bloom. 1991. Breeding status, distribution, and habitat associations of the tricolored blackbird (*Agelaius tricolor*), 1850-1989. June 21, 1991. Jones & Stokes Associates (JSA 88-187.) Sacramento, CA. Prepared for USFWS, Sacramento, CA.
Flett, M. A. and S. D. Sanders. 1987. Ecology of a Sierra Nevada population of Willow Flycatchers. Western Birds. 18:37-42.
Fowler, C., B. Valentine, S. Sanders, and M. Stafford. 1991. Habitat Suitability Index Model: Willow Flycatcher (*Empidonax traillii*). USDA Forest Service, Tahoe National Forest.
Harris, J. D., S. D. Sanders, and M. A. Flett. 1987. Willow Flycatcher surveys in the Sierra Nevada. Western Birds. 18:27-36.
Sanders, S. D. 1983. Foraging Ecology of a Sierra Nevada population of Douglas Tree Squirrels (*Tamiasciurus douglasii*). Ph.D. Dissertation, University of California, Davis.
Sanders, S. D. and M. A. Flett. 1989. The ecology of a Sierra Nevada population of Willow Flycatchers (*Empidonax traillii*), 1986 and 1987. California Management Branch Administrative Report No. 89-3, California Department of Fish and Game.

DECLARATION OF

Elizabeth A. Bagwell

I, Elizabeth A. Bagwell declare as follows:

1. I am presently employed by Aspen Environmental Group, a contractor to the California Energy Commission, **Siting, Transmission, and Environmental Protection Division**, as a cultural resources technical specialist.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on cultural resources for the **Genesis Solar Energy Project Revised Staff Assessment,** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony and errata is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and errata and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: July 2, 2010 Signed: Elizabeth A. Bagwell

At: Sacramento, California

DR. ELIZABETH A. BAGWELL

Associate, Cultural Resources

ACADEMIC BACKGROUND

PhD, Anthropology (Archaeology), University of New Mexico, 2006
MA, Anthropology (Archaeology), UC Berkeley, 1995
Certificate in Archaeological Technology, Cabrillo College, 1994
BA, Anthropology and Creative Writing, UC Santa Cruz, 1991

PROFESSIONAL EXPERIENCE

Elizabeth A. Bagwell recently joined Aspen as an Associate in Cultural Resources. She has 19 years of experience conducting field work, researching, analyzing, and writing about archaeology and anthropology. She has experience preparing environmental documents pursuant to applicable federal, state and local regulations in California, Arizona, New Mexico and internationally in Mexico. These documents emphasize compliance with the National Environmental Policy Act (NEPA), Section 106 of the National Historic Preservation Act (NHPA), Native American Graves Protection and Repatriation Act (NAGPRA), and California Environ¬mental Quality Act (CEQA). She is an expert in explaining cultural resource preservation and mitigation to rural community members in both English and Spanish. She is a specialist in the archaeology of the Sonoran and Chihuahuan Deserts of the United States and Mexico and has published several academic articles based on her studies of architecture and craft production in ancient North America.

Aspen Environmental Group — December 2009 to present

Dr. Bagwell is currently providing technical support to the following project:

California Energy Commission – Cultural Resources Assessment for the Genesis Solar Energy Project. Dr. Bagwell is currently serving as the lead technical staff for the analysis of impacts to cultural resources from the 250 MW power plant in an undeveloped area of the Mojave Desert near Dry Ford Lake. Important cultural issues include direct impacts to prehistoric Native American and historic World War II military maneouver sites and potential indirect impacts to a traditional cultural property (TCP).

Desert Archaeology, Inc. – Tucson, Arizona — 2007-2009

Dr. Bagwell served as a project manager for a variety of cultural resources mitigation projects for on-call clients – the City of Phoenix, Phoenix Aviation Department, and the Salt River Project. Some of these include:

- **Phoenix Sky Harbor International Airport Automated Train Project, Maricopa County, Arizona - City of Phoenix Aviation Department.** Co-author of the cultural resources treatment plan outlining compliance with local, state, and federal regulations for ground

disturbance at the National Register of Historic Places listed Pueblo Grande Museum and Archaeological Park. Project manager for field mitigation required in the plan.

- **Dinosaur to Hunt 12kV/69kV Transmission Line, Arizona - Salt River Project**. Supervision of the mitigation of prehistoric Native American houses and canals .
- **Palo Verde to Pinal West 500 kV Transmission Line, Arizona – Salt River Project.** Supervision of the mitigation of the Gilespie Dam Site, a large prehistoric Native American village.
- **Abel 230/69kV Substation, Queen Creek, Arizona – Salt River Project.** Lead staff on cultural resources assessment of proposed Abel Substation. Part of planning for a new double-circuit 230kV transmission line connecting two SRP-owned and previously sited sites to serve developing areas in and around Queen Creek.

University of New Mexico 2000-2002, 2005-2006

As Project Manager, lead a team of researchers studying prehistoric Native American architecture in northeastern Sonora, Mexico. Responsibilities included compliance with Mexican federal cultural resources law, research design, grant writing, report writing, budgeting and logistics, hiring and supervision of field and laboratory crew, negotiations with local land owners and politicians, data analysis and interpretation, public presentations, and publications.

Laboratory of Tree Ring Research, University of Arizona 2003-2004

As Project Manager, lead a team of researchers establishing a regional tree-ring chronology for northeastern Sonora, Mexico. Responsibilities included compliance with Mexican federal cultural resources law, supervision of field crew, negotiations with local land owners and politicians, research design, grant writing, report writing, budgeting, and logistics.

University of New Mexico 1999

As Project Manager, lead a team of researchers identifying prehistoric Native American sites in northeastern Sonora, Mexico. Responsibilities included compliance with Mexican federal cultural resources law, supervision of field crew, negotiations with local land owners and politicians, and grant writing.

Southwest Archaeological Consultants, New Mexico 1998

As a Field Supervisor, lead a team mitigating impacts to prehistoric Native American sites on coal mines in northeastern New Mexico.

University of New Mexico 1996, 1997

As a Field Supervisor, lead a team of researchers excavating late prehistoric Native American and early Spanish colonial sites in New Mexico.

BioSystems Analysis, Inc. – Santa Cruz, California 1992-1994

As a Lab Technician and Field Archaeologist, assisted with the mitigation of impacts to various prehistoric Native American sites along the central coast of California. Some of the field projects included:

- Fort Hunter-Liggett Cultural Resources On-Call
- Coastal Branch Phase II State Water Project
- Caltrans Highway 68 Rerouting, Fort Ord

MEMBERSHIPS

- Register of Professional Archaeologists
- Qualified Cultural Resources Project Manager – Arizona State Historic Preservation Office (AZ State Museum), 2008-2009
- Qualified Cultural Resources Project Manager – New Mexico State Historic Preservation Office, 2008-2009
- Society for American Archaeology
- Society for California Archaeology
- Arizona Archaeological Council
- Arizona Archaeological and Historical Society
- New Mexico Archaeological Council

HONORS AND AWARDS

- University of New Mexico Tom L. Popejoy Prize for most outstanding UNM dissertation, Domestic Architectural Production in Northwest Mexico, 2006
- National Science Foundation grant BCS-0210436: Expanding Dendroarchaeology into Northern Mexico, 2002
- National Science Foundation Dissertation Improvement Grant BCS-0121730, 2001

SELECTED PUBLICATIONS AND REPORTS

- Bagwell, Elizabeth A. 2008 Archaeological Data Recovery for the Dinosaur to Hunt 12kV/69kV Electric Line, Pinal County, Arizona. Technical Report No. 08-04. Desert Archaeology, Inc., Tucson, Arizona.
- Bagwell, Elizabeth A. 2008 Archaeological Monitoring for a Neighborhood Services Project at 922 E. Taylor, Phoenix, Arizona. Project Report No. 08-124. Desert Archaeology, Inc., Tucson, Arizona.
- Bagwell, Elizabeth A. 2008 Archaeological Monitoring at the Children's Museum of Phoenix, Maricopa County, Arizona. Project Report No. 08-123. Desert Archaeology, Inc., Tucson, Arizona.
- Bagwell, Elizabeth A. 2008 Cultural Resources Survey of 160 Acres North of the Abel Substation Site, Southeast of Queen Creek, Pinal County, Arizona. Project Report No. 08-114. Desert Archaeology, Inc., Tucson, Arizona.
- Bagwell, Elizabeth A. 2006 Domestic Architectural Production in Northwest Mexico. Ph.D. Dissertation, Department of Anthropology, University of New Mexico.
- Bagwell, Elizabeth A. 2004 Architectural Patterns Along the Rio Taraises, Northern Sierra Madre Occidental, Sonora. Kiva 70(1):7-30.
- Bagwell, Elizabeth A. 2003 The Production of Architectural Artifacts: An Analysis of Cliff-Dwellings in the Sierra Madre Occidental of Northwest Sonora, Mexico. 2001 Field Season. A report prepared for the Council of Archaeology of the National Institute of Anthropology and History (Informe al Consejo de Arqueología, Instituto Nacional de Antropología e Historia), Mexico City, Mexico.
- Bagwell, Elizabeth A. 2002 Ceramic Form and Skill: Attempting to Identify Child Producers at Pecos Pueblo, New Mexico. In Children in the Prehistoric Puebloan Southwest, pp. 90-107, edited by K. Kamp. University of Utah Press, Salt Lake City.
- Henderson, T. Kathleen and Elizabeth A. Bagwell 2007 Archaeological Treatment Plan for the Phoenix Sky Harbor International Airport Stage 1 Automated Train Project, Maricopa County, Arizona. Prepared for the City of Phoenix, PGM 2007-46. Desert Archaeology, Inc., Tucson.

- Ruscavage-Barz, Samantha and Elizabeth A. Bagwell 2006 Gathering Spaces and Bounded Places: The Religious Significance of Plaza-Oriented Communities in the Northern Rio Grande, New Mexico. In Religion in the Prehispanic Southwest, pp. 81-102, edited by C. S. VanPool, T. L. VanPool, and D. Phillips. Altamira Press, Lanham, Maryland.

RECENT PUBLIC OUTREACH AND PARTICIPATION IN PROFESSIONAL MEETINGS

- 2010 Co-Organizer and Co-Chair. Archaeology and Society. Session organized for the 11th Annual Southwest Symposium, Hermosillo, Sonora, Mexico. January 8-10, 2010. [With Cesar Villalobos.]
- 2008 Expecting the Unexpected: Recent Excavations at the Gillespie Dam Site. Poster presented at the Advances in Hohokam Archaeology Conference. Arizona Archaeological Council, Pueblo Grande Museum, Phoenix. October 24-25, 2008. [Senior author: T. Kathleen Henderson.]
- 2008 Hohokam Architecture During the Classic Period – What's Paquimé Got to Do With It? Paper presented at the 15th Biennial Mogollon Conference, Silver City, New Mexico. October 2-4, 2008.
- 2008 An Architectural Study of Cliff-Dwellings of the Sierra Madres, Sonora, Mexico. Invited public presentation for the Arizona Archaeological Society, Phoenix Chapter, Pueblo Grande Museum. April 10, 2008.
- 2008 Co-Organizer and Co-Chair. Recent Research in the Archaeology of Northwest Mexico. Symposium organized for the 73rd Annual Meeting of the Society for American Archaeology, Vancouver, B.C. March 26-30, 2008. [With Michael Mathiowetz.]
- 2008 Medio Period Colonization of the Northern Sierra of Northwest Mexico. Paper presented at the 73rd Annual Meeting of the Society for American Archaeology, Vancouver, B.C. March 26-30, 2008.
- 2008 Specialized Architectural Production: An Example from Northwest Mexico. Poster presented at the 20th Anniversary Southwest Symposium, Tempe, Arizona. January 17-19, 2008.

DECLARATION OF

Beverly E. Bastian

I, Beverly E. Bastian declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Office of the Siting, Transmission, and Environmental Protection Division as a Planner II.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I assisted in the preparation of the staff testimony on cultural resources for the **Genesis Solar Energy Project Revised Staff Assessment,** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony and errata is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and errata and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: July 2, 2010 Signed: _____

At: Sacramento, California

Beverly E. Bastian
1516 Ninth Street MS 40
Sacramento, CA 95814-5504
(916) 654-4840 email: bbastian@energy.state.ca.us

Education	Field	Degree	Year
University of California, Davis	Anthropology	B.A	1967
University of California, Davis	Anthropology	M.A	1969
Tulane University	Anthropology	A.B.D.	1975
University of Mississippi	American History	(courses only)	1989
University of California, Santa Barbara	Public (American) History and Historic Preservation	A.B.D.	1996

Experience

State of California, California Energy Commission *2005 to present*
Planner II, Siting, Transmission, and Environmental Protection Division, Environmental Office, Biological and Cultural Unit
All tasks related to the production of the cultural resources sections of CEQA-equivalent (California Environmental Quality Act) documents for the environmental review of proposed 50-MW+ power plants in California, including: Evaluating data in applications; writing data requests to applicants and doing independent research to compile an inventory of and evaluate the historical/cultural significance of cultural resources subject to significant impacts from proposed projects; providing and receiving information in public hearings on applications; analyzing all pertinent data; writing Staff Assessments of impacts; identifying California Register of Historical Resources-eligible cultural resources; developing mitigation measures to reduce to insignificant any impacts to Register-eligible cultural resources; providing expert testimony on my analyses and recommendations in public hearings; and reviewing compliance with mitigation measures during the construction, operation, and decommissioning of certified power plants. Additional tasks include: providing prefiling assistance to applicants; coordinating environmental review of power plant projects with cultural resources specialists in sister state agencies and in federal agencies; supervising and reviewing the work of Commission cultural resources consultants; reviewing the CEQA documents of sister state agencies; and developing internal procedures and guidelines to improve cultural resources review of applications.

State of California, Department of Parks and Recreation *2001 to 2005*
Historian II, Cultural Resources Division, Cultural Resources Support Unit
Major and complex historical and historic architectural investigations and studies dealing with the significance, integrity, and management of historic buildings, structures, and landscapes in California's state parks; participation in interdisciplinary teams and project assignments; preparation of technical reports and correspondence; inventorying and evaluating historic properties; coordinating the statewide registration of historical properties; assessing the eligibility of historic properties to the National Register of Historic Places and the California Register of Historical Resources; reviewing environmental documents and providing technical analyses of major Departmental projects to determine impacts to cultural resources under State and federal laws; identifying resource issues and constraints; establishing allowable use and development guidelines; developing approaches to protect, enhance, and perpetuate cultural resources under relevant State and federal laws, regulations, and standards; proposing and developing programs, policies, and budgets to meet Department's historic preservation missions.

Department of Social Sciences, American River College *2000 to 2002*
Instructor (part-time), American History
Creation and presentation of classroom lectures, selection of assigned texts and readings, creation and administration of quizzes and examinations, assignment and supervision of student research papers, student consultation in office hours, grading of all quizzes, tests, and papers, and assigning final student grades. These research, organizing, and teaching skills demonstrate ability to organize information, to speak effectively to the public, and to train and direct other personnel.

Department of Sociology and Anthropology, University of Mississippi *1987 to 1989*
Archaeologist, Center for Archaeological Research
All tasks for the completion of the historical archaeological part of an archaeological survey and testing program final report related to a U. S. Army Corps of Engineers erosion control project in twelve north-central Mississippi counties, including: Coordinating the activities of a field crew and the research of historians working in archives; setting up an artifact database using survey data to generate statistical summaries for discovered historical archaeological sites; gathering historical settlement and land-use data for twelve counties; conducting a special statistical analysis and synthesis of historical data only, focusing on pre-and post-Civil War land tenure and agricultural production for plantations in two counties where soil fertility contrasted; synthesizing data from all sources, collaborating on the final cultural resources management report with archaeologists specializing in prehistory and survey and sampling methodology; presenting findings at the annual meeting of the Society for Historical Archaeology in 1989.

Gilbert Commonwealth, Inc. *1984 to 1987*
Historical Archaeologist and Project Manager, Environmental Unit
All tasks as Principal Investigator for six major historical archaeological and/or historical architectural cultural resources management projects done under contract to federal, state, and local governments, including: Writing winning proposals for these projects; negotiating and managing project budgets; gathering/supervising the gathering of historical, oral historical, and archaeological data; analyzing/supervising the analysis of gathered data; and writing/supervising the writing of reports of findings, along with the creation of maps, illustrations, and data tables for these reports; serving as the historian and historical preservationist on several multidisciplinary teams tasked with siting the routes for several major power lines in east Texas.

Tennessee Valley Authority (personal services contract) *1979 to 1981, 1983-1984*
Historical Archaeologist (self-employed)
All tasks as Principal Investigator for various cultural resources management projects in areas affected by TVA construction, the most significant of which were: the complete excavation of and report on seven nineteenth-century log-cabin sites in Cedar Creek Reservoir in northwestern Alabama; and all historical research, the field work, and the report for the underwater remote-sensing reconnaissance and underwater videotaping of sunken Civil War cargo boats and gunboats at Johnsonville, Tennessee, in the western part of the Tennessee River.

Other Archaeological Projects *1966 to 1981*

Professional Societies

Register of Professional Archaeologists, #10683
Society for Historical Archaeology
California Council for the Promotion of History
Vernacular Architecture Forum
Society for California Archeology

DECLARATION OF
Testimony of Scott Debauche

I, **Scott Debauche,** declare as follows:

1. I am presently employed by Aspen Environmental Group, a contractor to the California Energy Commission, Siting, Transmission and Environmental Protection Division, as a **Socioeconomic Technical Specialist**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Socioeconomics** for the **Genesis Solar Energy Project Revised Staff Assessment Supplement** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: July 2, 2010 Signed: _____

At: Agoura Hills, California

SCOTT DEBAUCHE

Environmental Planner

ACADEMIC BACKGROUND

B.S., Urban & Regional Planning, University of Minnesota, 1994

PROFESSIONAL EXPERIENCE

Mr. Debauche is an environmental planner with over 14 years of experience preparing a variety of federal and State of California environmental, planning, and analytical documents for large-scale infrastructure and development projects. Mr. Debauche brings the experience of specializing in the integration and completion of NEPA and CEQA documentation joint documentation evaluating Transportation/Traffic, Noise, Socioeconomics and Environmental Justice, Air Quality, and Alternatives analyses.

Aspen Environmental Group — 2001 to present

- **TANC Transmission Project (TTP) EIR/EIS, several Northern California Counties.** Mr. Debauche is currently serving as the Technical Specialist in charge of preparation of the EIR/EIS Transportation/Traffic and Socioeconomics CEQA/NEPA analyses. The Transmission Agency of Northern California (TANC) and Western Area Power Administration (Western), an agency of the U.S. Department of Energy (DOE), are the CEQA lead agency and NEPA lead agency, respectively. The TTP generally would consist of new and upgraded 500 kilovolt (kV) and 230 kV transmission lines, substations, and related facilities generally extending from northeastern California near Ravendale in Lassen County to the California Central Valley through Sacramento and Contra Costa Counties and westward into the San Francisco Bay Area.
- **Littlerock Reservoir Sediment Removal Project EIS/EIR, Palmdale, CA.** Mr. Debauche is the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, and Socioeconomics analyses for this joint EIS/EIR evaluating the impacts of sediment removal alternatives for the Littlerock Reservoir and Dam on USFS Angeles National Forest (NEPA Lead Agency) lands in Los Angeles County. The project involves impacts to the arroyo toad, extensive coordination with USFWS for a Section 7 consultation, incorporation of new Forest Service Plan updates and requirements into the analysis, preparation of the Forest Service required BE/BA, and analysis of compliance with federal conformity requirements. Aspen is currently working on the Administrative Draft EIR/EIS and assisting the PWD with portions of their Proposition 50 grant application to the DWR.
- **Alta Wind Project EIR, Kern County, CA.** Mr. Debauche is the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, and Air Quality analyses for this EIR. The applicant, Alta Windpower Development, LLC, proposes to develop the Alta-Oak Creek Mojave Project (proposed project or project) for the commercial production of up to 800 Megawatts (MW) of electricity from wind turbines. The proposed project would result in construction of up to 350 wind turbine generators, their ancillary facilities and supporting infrastructure located on three distinct land areas comprising a total of approximately 10,750 acres located approximately 3 miles west of State Route (SR) 14 (Antelope Valley Freeway) and 3 miles south of SR-58 in the Willow Springs area of eastern Kern County.

- **Liberty Energy Power Plant EIR, Banning, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Air Quality, Public Services and Utilities, and Hazardous Materials analyses for this CEQA document. Liberty Energy is proposing to construct a new biomass power plant, located at the eastern terminus of Westward Avenue in the City of Banning, Riverside County, California. The generating facility would include three power generation units (trains) to produce 15 MW (17.5 MW gross). Each unit would utilize a bubbling fluidized bed gasifier boiler to generate heat to produce high pressure steam.
- **Baldwin Hills Oil Field Community Standards District EIR Review and Ordinance Preparation, Culver City, CA.** Mr. Debauche served as the Technical Specialist for the City of Culver City reviewing the Los Angeles County Baldwin Hills Oils Field Community Standards District EIR Noise analysis evaluating the impacts of expanding the existing Baldwin Hills oil field. Once completed, Mr. Debauche then prepared the Noise section of the newly enacted City of Culver City Community Standards District overlay zone restricting noise generation by the Baldwin Hills Oil Field on the residents of Culver City.
- **Topaz Solar Project EIR, San Luis Obispo County, CA.** Mr. Debauche is the Technical Specialist in charge of preparation of the Transportation/Traffic and Air Quality sections of this EIR for this 500 MW solar photovoltaic project in the Carrizo Plain area. This project requires the conversion of approximately 6,000 acres of open space (60 percent of which are under land preservation contracts) to an industrial use.
- **California Valley Solar Ranch EIR, San Luis Obispo County, CA.** Mr. Debauche is the technical specialist in charge of preparation of the Air Quality analysis of this EIR for this 250 MW solar photovoltaic project in the Carrizo Plain area. This project requires the conversion of approximately 4,000 acres of open space to an industrial use.
- **Long Beach LNG Import Project EIR/EIS, Long Beach, CA.** Under contract to the City of Long Beach, Aspen was tasked to review the Draft EIS/EIR for the proposed construction and operation of this onshore LNG facility to be located at the Port of Long Beach. Mr. Debauche reviewed the document for technical adequacy and assisted the City in preparing written comments for the following sections of the EIS/EIR: Transportation/Traffic and Noise.
- **Sunset Substation and Transmission and Distribution Project EIR, Banning, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Socioeconomics, and Alternatives analyses for this EIR. The City of Banning proposes to construct the Sunset Substation and supporting 33-kilovolt (kV) transmission line that would interconnect with the City's existing distribution system. The purpose of this new substation and transmission is to relieve the existing overloads that are occurring within the City's electric system and to accommodate projected growth in the City.
- **MARS EIR/EIS, Monterey, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of the Environmental Justice analysis for this EIR/EIS, which would evaluate the effects associated with the installation and operation of the proposed Monterey Accelerated Research System (MARS) Cabled Observatory Project (Project) proposed by Monterey Bay Aquarium Research Institute (MBARI)[NEPA Lead Agency]. The goal of the Project was to install and operate, in State and Federal waters, an advanced cabled observatory in Monterey Bay that would provide a continuous monitoring presence in the Monterey Bay National Marine Sanctuary (MBNMS) as well as serve as the test bed for a state-of-the-art regional ocean observatory, currently one component of the National Science Foundation (NSF) Ocean Observatories Initiative (OOI). The Environmental Justice analysis evaluated the potential for any disproportionate project impacts to both land-based populations and fisheries workers.
- **Diablo Canyon Power Plant (DCPP) Steam Generator Replacement Project EIR, San Luis Obispo County, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation

of the Socioeconomics and Alternatives analyses sections of this EIR. The EIR addressed impacts associated with the replacement of the eight original steam generators (OSGs) at DCPP Units 1 and 2 due to degradation from stress and corrosion cracking, and other maintenance difficulties. The Proposed Project would be located at the DCPP facility, which occupies 760 acres within PG&E's 12,000-acre owner-controlled land on the California coast in central San Luis Obispo County. Land use issues of concern include impacts to agricultural lands, recreational resources, and potential Coastal Act inconsistencies.

- **Lake Canyon Dam and Detention Basin Project EIR, Ventura County, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Air Quality, and Hazardous Materials analyses for this CEQA document. The proposed project would include an earthfill dam and detention basin located in an unincorporated area of Ventura County, California. It would operate in conjunction with the existing Arundell Dam and Detention Basin, which is located an estimated 600 feet south-southwest and downstream of the proposed project site, to detain peak storm flows and capture the associated debris expected from a 100-year storm event.
- **Colton Substation Project IS/MND, Colton, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Air Quality, and Hazardous Materials analyses for this CEQA document. The City of Colton proposes to construct the 1.9 acrea North Substation and supporting 1.7 miles of 69 kV subtransmission and distribution facilities necessary to interconnect with the existing city-owned subtransmission and distribution systems.
- **San Antonio Creek Giant Reed Removal Project IS/MND, Ventura County, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of a number of technical issues area analyses for this CEQA document including: Transportation/Traffic, Noise, Air Quality, and Hazardous Materials. The purpose of the project is to remove giant reed within the upper reaches of the San Antonio Creek watershed and several tributaries to support other existing efforts to remove this invasive plant species along the main stem of the Ventura River and its watershed.

California Public Utilities Commission (CPUC). Under Aspen's environmental services contract with the CPUC, Mr. Debauche has prepared environmental analysis sections of environmental reports analyzing large-scale infrastructure projects. His project experience with the CPUC includes the following:

- **Tehachapi Renewable Transmission Project (TRTP) EIR/EIS, Kern, Los Angeles, and San Bernardino Counties, CA.** For this EIR/EIS prepared by USFS, Angeles National Forest and CPUC, Mr. Debauche is currently serving as the Technical Specialist for Noise and Alternatives evaluation for SCE's proposal to construct, use, and maintain a series of new and upgraded high-voltage electric transmission lines and substations to deliver electricity generated from new wind energy projects in eastern Kern County. Approximately 46 miles of the project would be located in a 200- to 400-foot right-of-way on National Forest System land (managed by the Angeles National Forest) and approximately three miles would require expanded right-of-way within the Angeles National Forest. The proposed transmission system upgrades of TRTP are separated into eight distinct segments: Segments 4 through 11. Segments 1 (Antelope-Pardee) and Segments 2 and 3 (Antelope Transmission Project) were evaluated in separate CEQA and NEPA documents as described below.
- **Devers–Palo Verde 500 kV Transmission Line Project EIS/EIR, southern California/western Arizona.** For this EIR/EIS prepared by U.S. Bureau of Land Management and CPUC, Mr. Debauche served as the Technical Specialist for Transportation/Traffic, Noise, Socioeconomics, and Alternatives evaluation for SCE's proposed 250-mile transmission line project from the Palo Verde Nuclear power plant in Arizona to the northern Palm Springs area in California. Major issues of concern include EMF and visual impacts on property values, impacts on the area's vast recreational resources and tribal lands, and the development and evaluation of several route alternatives, including the Devers-Valley No. 2 Route Alternative, which eventually was approved by the CPUC.

- **Antelope-Pardee 500 kV Transmission Line Project EIS/EIR, Los Angeles County, CA.** For this EIR/EIS prepared by USFS, Angeles National Forest and CPUC, Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Socioeconomics, and Alternatives evaluation for SCE's proposed 25-mile transmission line project from the Antelope Substation in the City of Lancaster, through the ANF, and terminating at SCE's Pardee Substation in Santa Clarita. Major issues of concern included impacts to biological, recreational, and cultural resources within Forest lands, EMF and visual impacts on property values, impacts on residences in the urbanized southern regions of the route, and the development and evaluation of several route alternatives.
- **El Casco System Project EIR, Riverside, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Socioeconomics, and Alternatives analyses for this EIR prepared for the CPUC to evaluate SCE's application for a Permit to Construct (PTC) the El Casco System Project. The Proposed Project would be located in a rapidly growing area of northern Riverside County, which includes the Cities of Beaumont, Banning, and Calimesa. A 115 kV subtransmission line begins at Banning Substation and extends westward toward the proposed El Casco Substation site within the existing Banning to Maraschino 115 kV subtransmission line and Maraschino–El Casco 115 kV subtransmission line ROWs. Major issues of concern include impacts to existing and residential land uses, which have led to the development of a partial underground alternative and a route alternative different than the project route proposed by SCE (the Applicant). The 1,200-page Draft EIR was released for a 45-day public review and comment on December 12, 2007, and evaluates project alternatives at the same level of detail as the Proposed Project analysis.
- **Antelope Transmission Project, Segments 2 & 3 EIR, Los Angeles and Kern Counties, CA.** For this EIR prepared by the CPUC, Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Socioeconomics, and Alternatives evaluation. The proposed Project includes both Segment 2 and Segment 3 of the Antelope Transmission Project, and involves construction of new transmission line infrastructure from the Tehachapi Wind Resource Area in southern Kern County, California, to SCE's existing Vincent Substation in Los Angeles County, California. The Tehachapi Wind Resource Area is one of the State's greatest potential sources for the generation of wind energy. A variety of wind energy projects are currently in development for this region. Major issues of concern include EMF and visual impacts on property values, impacts on residences and agricultural resources, and the development and evaluation of several substation and route alternatives.
- **SDG&E Miguel Mission Substation Draft EIR.** The major part of the Proposed Project would include the installation of a new, bundled 230 kV circuit between Miguel and Mission Substations, which would be located entirely within SDG&E's existing 35-mile ROW. Mr. Debauche prepared social science analysis for the Initial Study, as well as the Draft EIR Project Description and several key environmental sections.
- **PG&E's Proposed Divestiture of Hydroelectric Assets Project EIR.** Mr. Debauche prepared several key sections of the Draft EIR, including Socioeconomics and Hazardous Materials analysis. PG&E owns and operates the largest private hydroelectric power system in the nation. Situated in the Sierra Nevada, Southern Cascade, and Coastal mountain ranges of California, this system is strung along 16 different river basins and annually generates approximately five percent of the power consumed each year in California. The proposed sale of assets also includes approximately 140,000 acres of land proposed for sale with the hydroelectric system. The EIR analyzes the range of operational changes that could occur under new ownership, including complex integrated models that analyze power generation and water management.
- **Viejo System Project IS/MND, Orange County, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Socioeconomics, and Alternatives evaluation for the project's CEQA documentation, including and Initial Study, prepared on behalf of the CPUC to evaluate Southern California Edison's (SCE) Application for a Permit to Construct the Viejo System Project, which was in SCE's forecasted demand of electricity and goal of providing reliable electric service in southern Orange County. The Viejo System Project would serve Lake Forest, Mission Viejo, and the surrounding areas. Components of the project included, construction of the new 220/66/12 kilovolt (kV) Viejo Substation, installation of a new 66 kV subtransmission line within an existing SCE right-of-way, replacement of 19 double-circuit tubular steel poles with 13 H-frames structures, and minor modification to other transmission lines. Major issues of concern include visual impacts of transmission towers, EMF effects, and project impacts on property values.

- **Looking Glass Networks Fiber Optic Cable Project IS/MND, northern and southern California.** As part of Aspen's ongoing contract with the CPUC for review of Telecommunications projects, this document encompasses and evaluation of project impacts and network upgrades in the San Francisco Bay Area and the Los Angeles Basin Area. Prepared the socioeconomic analysis for this comprehensive CEQA document reviewing the potential impacts of hundreds of miles of newly proposed fiber optic lines throughout northern and southern California, including Los Angeles and Orange Counties. Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Socioeconomics, and Alternatives evaluation for the project's CEQA documentation.

California Energy Commission (CEC), Technical Assistance in Application for Certification Review. In response to California's power shortage, Aspen is assisting the California Energy Commission in evaluating the environmental and engineering aspects of new power plant applications throughout the State. As part of this effort, Mr. Debauche works as a technical specialist for Transportation/Traffic, Socioeconomics and Environmental Justice, and Alternatives analyses for the following power plant projects:

- **Carlsbad Energy Center Project, Carlsbad, CA.** Technical Specialist in charge of preparation of the Transportation/Traffic and Alternatives Staff Assessments for Carlsbad Energy Center, LLC's Application for Certification (AFC) to build the Carlsbad Energy Center Project (CECP), which will consist of a 558 MW gross combined-cycle generating facility configured using two units with one natural-gas-fired combustion turbine and one steam turbine per or unit. Issues of concern include major incompatibilities with local LORS, and cumulative impacts from widening of I-5.
- **Hydrogen Energy California Power Plant Project, Kern County CA.** Technical Specialist in charge of preparation of the Transportation/Traffic and Socioconomics/Environmental Justice Staff Assessments for Hydrogen Energy International, LLC integrated gasification combined cycle (IGCC) power generating facility called Hydrogen Energy California (HECA) in Kern County, California. The proposed project will gasify petroleum coke (or blends of petroleum coke and coal, as needed) to produce hydrogen to fuel a combustion turbine operating in combined cycle mode. The gasification component would produce 180 million standard cubic feet per day (MMSCFD) of hydrogen to feed a 390 megawatt (MW) gross combined cycle plant providing California with low-carbon baseload power to the grid.
- **CPV Vaca Station Power Plant Project, Vacaville, CA.** Technical Specialist in charge of preparation of the Transportation/Traffic Staff Assessment prepared for the CPV Vaca Station (CPVV) project, a natural gas-fired, combined-cycle electrical generating facility rated at a nominal generating capacity of 660 megawatts (MW). The CPVV is proposed for a 24-acre site located at the intersection of Lewis and Fry roads in a rural area within the city limits of Vacaville, Solano County.
- **Ivanpah Solar Electric Generating System Project, San Bernardino County, CA.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessment/BLM EIS for a 400-megawatt solar thermal electric power generating system. The project's technology would include heliostat mirror fields focusing solar energy on power tower receivers producing steam for running turbine generators. Related facilities would include administrative buildings, transmission lines, a substation, gas lines, water lines, steam lines, and well water pumps. The proposed project would be developed entirely in the Mojave Desert region of San Bernardino County, California.
- **Abengoa Mojave Solar Power Project, San Bernardino County, CA.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessment for a nominal 250 megawatt (MW) solar electric generating facility to be located near Harper Dry Lake in an unincorporated area of San Bernardino County. The project will implement well-established parabolic trough technology to solar heat a heat transfer fluid (HTF) technology.
- **Rice Solar Energy Generating System Project, Riverside County, CA.** Technical Specialist in charge of preparation of the Transportation/Traffic Staff Assessment/BLM EIS for a 50,000 megawatt hours (MWh) of renewable energy annually, with a nominal net generating capacity of 150 megawatts (MW) located in an unincorporated area of eastern Riverside County, California. The proposed facility will use concentrating solar power (CSP) technology, with a central receiver tower and an integrated thermal storage system.

- **Blythe Solar Power Project, Riverside County, CA.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessment/BLM EIS for a 1,000 MW solar thermal electric generating facility in Riverside County. The project will utilize solar parabolic trough technology to generate electricity. With this technology, arrays of parabolic mirrors collect heat energy from the sun and refocus the radiation on a receiver tube located at the focal point of the parabola.
- **GWF Henrietta Peaker Project, Kings County, CA.** Technical Specialist in charge of preparation of the Transportation/Traffic Staff Assessment for GWF's proposal to modify the existing Henrietta Power Plant. New once-through steam generators (OTSGs) will be installed to allow the plant to be operated in its current simple-cycle configuration with no steam generation but with the selective catalytic reduction (SCR) and oxidation catalyst in operation, or to operate as a combined-cycle power plant generating an additional 25 MW of power with new proposed emission limits.
- **Palen Solar Power Project, Riverside County, CA.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessment/BLM EIS for a 500 MW solar thermal electric generating facility in Riverside County. The Project will utilize solar parabolic trough technology to generate electricity. With this technology, arrays of parabolic mirrors collect heat energy from the sun and refocus the radiation on a receiver tube located at the focal point of the parabola.
- **Watson Cogeneration Steam and Electric Reliability Project, Carson, CA**. Technical Specialist for the Transportation/Traffic Staff Assessment for a nominal 85 MW combustion turbine generator (CTG), with a single-pressure heat recovery steam generator (HRSG) to provide additional process steam to the BP Carson refinery, to the existing cogeneration facility owned by Watson. The project site is a 2.5-acre brown field site located within the boundary of the existing Watson Cogeneration Facility, which is a 21.7-acre area within BP's existing Carson Refinery (BP Refinery), in the City of Carson, Los Angeles County.
- **Oakley Generating Station Project, Oakley, CA.** Technical Specialist in charge of preparation of the Transportation/Traffic Staff Assessment for a natural gas-fired, combined-cycle electrical generating facility rated at a nominal generating capacity of 624 megawatts (MW). The proposed project would be located in the City of Oakley, in Contra Costa County.
- **Canyon Power Plant Project, Anaheim, CA.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessments for a nominal 200 megawatt (MW) simple-cycle plant, using four natural gas-fired combustion turbines and associated infrastructure proposed by Southern California Public Power Authority (SCPPA). This project is a peaking power plant project located within the City of Anaheim, California.
- **GWF Tracy Combined Cycle Power Plant Project, San Joaquin County, CA.** Technical Specialist in charge of preparation of the Transportation/Traffic Staff Assessment for GWF's proposal to modify the existing TPP, a nominal 169-megawatt (MW) simple-cycle power plant, by converting the facility into a combined-cycle power plant with a nominal 145 MW, net, of additional generating capacity.
- **Lodi Energy Center Project, Lodi, CA.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessment for a natural gas-fired, combined-cycle electrical generating facility rated at a nominal 225-megawatt (MW). The Lodi Energy Center is proposed for a site parcel of approximately 4.4 acres adjacent to the City of Lodi's White Slough Water Pollution Control Facility (WPCF)
- **Kings River Conservation District Community Peaker Power Plant Project, Fresno County, CA.** Technical Specialist in charge of preparation of the Transportation/Traffic Staff Assessment for the Kings Rivers Conservation District, who filed a Small Power Plant Exemption for the King River Conservation District Peaking Power Plant. The proposed 97-megawatt natural gas-fired plant will be located south of the City of Fresno and near the community of Malaga in Fresno County.
- **Valero Cogeneration Project, Benicia, CA.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessments for a proposed cogeneration facility at the Valero Refinery in Benicia. Issues addressed included impacts on public services and other project-related population impacts such as school impact fees.
- **Rio Linda/Elverta Power Project, Sacramento, CA.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessments for a 560-megawatt natural gas power plant in

the northern Sacramento County. Issues of importance included environmental justice and impacts on property values.

- **Magnolia Power Project, Burbank, CA.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessments for this nominal 250-megawatt natural gas combined-cycle fired electrical generating facility to be located at the site of the existing City of Burbank power plant. Environmental justice issues and potential impacts on local economy and employment were evaluated.
- **Avenal Energy Project, Kings County, CA.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessments for a 600-megawatt combined cycle electrical generating facility, and associated linear facilities.
- **Inland Empire Energy Center Project, Riverside County, CA.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessments for a 670-megawatt natural gas-fired, combined-cycle electric generating facility and associated linear facilities including, a new 18-inch, 4.7-mile pipeline for the disposal of non-reclaimable wastewater, and a new 20-inch natural gas pipeline. The project would be located on approximately 46-acres near Romoland, within Riverside County.
- **Coastal Plant Study.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessments for a possible modernization, re-tooling, or expansion of California's 25 coastal power plants including the Encina Power Plant and the San Onofre Nuclear Power Plant.

Los Angeles Department of Water and Power (LADWP). Responsible for conducting the analyses of the technical and social science issue areas for a variety of EISs and EAs as part of two environmental services contracts. Delivery orders have included:

- **River Supply Conduit (RSC) Upper Reach Project EIR, Los Angeles and Burbank, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Socioeconomics, and Alternatives analyses for the CEQA document for this project. The RSC is a major transmission pipeline in the LADWP water distribution system. The existing RSC pipeline's purpose is to transport large amounts of water from the Los Angeles Reservoir Complex and local ground water wells to reservoirs and distribution facilities located in the central areas within of the City of Los Angeles. The LADWP proposed a new larger RSC pipeline to replace and realign the Upper and Lower Reaches of the existing RSC pipeline, which would involve the construction of approximately 69,600 linear feet (about 13.2 miles) of 42-, 48-, 60-, 66-, 72-, 84-, and 96-inch diameter welded steel underground pipeline.
- **Mulholland Pumping Station and Lower Hollywood Reservoir Outlet Chlorination Station Project IS/MND, Los Angeles, CA.** Under Aspen's on-going environmental services contract with the City of Los Angeles Department of Water and Power (LADWP), Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Socioeconomics, and Alternatives analyses for this project. LADWP proposed to replace the existing historic pumping/chlorination station building as well as the existing lavatory and unoccupied Water Quality Laboratory buildings with a new single structure pumping/chlorination station within the LADWP's Hollywood Reservoir Complex located in the Hollywood Hills section of the City Los Angeles. These improvements were required due to the age and deterioration of the facility and the potential risk of seismic damage to existing structures. An Initial Study was prepared in support of a City of Los Angeles General Exemption.
- **Taylor Yard Water Recycling Project (TYWRP) IS/MND, Los Angeles and Glendale, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Socioeconomics, and Alternatives analyses for this project. LADWP proposed to construct the TYWRP in order to provide recycled water produced by the Los Angeles–Glendale Water Reclamation Plant (LAGWRP) to the Taylor Yard. An important part of the City of Los Angeles' expanding emphasis on water conservation is the concept that water is a resource that can be used more than once. Because all uses of water do not require the same quality of supply, the City has been developing programs to use recycled water for suitable landscaping and industrial uses. The project is located in the southernmost part of the City of Glendale and northeastern part of the City of Los Angeles. The IS/MND was adopted in the Summer of 2007.

- **DC Electrode Project IS/MND, Los Angeles, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Socioeconomics, and Alternatives analyses for this project. LADWP proposed to construct a new electrode distribution line from West Los Angeles to the Pacific Ocean stopping point in Malibu, CA up the Pacific Coast Highway.
- **District Cooling Plant Project, Los Angeles IS/MND, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Socioeconomics, and Alternatives analyses for this project. LADWP proposed to construct a District Cooling Plant and Distribution System (proposed project) in order to provide a centralized system for producing chilled water for use by area users, which are generally large commercial, governmental, industrial and institutional buildings who generate their own chilled water utilizing individual chiller plants for space cooling and air-conditioning.

U.S. Army Corps of Engineers, Los Angeles District. Responsible for conducting the analyses of the social science issue areas for a variety of EISs and EAs as part of two environmental services contracts. Delivery orders have included:

- **Prado Basin/Norco Bluffs/Reach 9 of the Santa Ana River Dikes Supplemental EAs, Riverside County, CA.** Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic analysis of two structural alternatives for the Norco Bluffs Toe Stabilization project as well as the No Action/No Project Alternative. Aspen developed the alternatives analyzed in this Supplemental NEPA Environmental Assessment document, a description of the alternatives' physical, construction, and operational characteristics, and a discussion of the potential environmental impacts.
- **Northeast Phoenix Drainage Area Alternatives Analysis Report, Phoenix and Scottsdale, AZ.** Mr. Debauche served as a Technical Specialist in charge of preparation of the Alternatives analysis report that evaluated the potential environmental impacts associated with channel and detention basin alternatives to control flooding problems resulting from fast rate of development in the northeast Phoenix area.
- **Murrieta Creek Flood Control and Environmental Restoration Project**. Mr. Debauche served as a Technical Specialist in charge of preparation of the Environmental Assessment and Mitigation Monitoring plan for Phase 1 of a flood control and restoration project in Riverside County.

California Department of Water Resources. Responsible for conducting the environmental analyses for CEQA compliance as part of two environmental services contracts. Delivery orders have included:

- **Piru Creek Stabilization and Restoration Project IS/MND, northern Los Angeles County.** The California Department of Water Resources (CDWR) proposes to repair erosion damage at a series of three locations downstream of Pyramid Dam and seismically retrofit the Pyramid Dam access bridge that crosses Piru Creek. Mr Debauche served as Technical Specialist in charge of preparation of the Initial Study Transportation/Traffic, Noise, Socioeconomics, and Alternatives analyses for the proposed project.
- **Pyramid Lake Repairs and Improvements Project IS/MND and EA, northern Los Angeles County.** Mr Debauche served as Technical Specialist in charge of preparation of the Initial Study Transportation/Traffic, Noise, Socioeconomics, and Alternatives analyses for the proposed project, which DWR and the Department of Boating and Waterways (DBW) conducted repairs and improvements at various recreational sites at Pyramid Lake, which is located on the border between Los Padres National Forest and Angeles National Forest; recreation is managed by Angeles National Forest. In addition to the CEQA documentation and preparation of permit applications, Aspen coordinated DWR and DBW's efforts with the USFS, and the permitting agencies (i.e., CDFG, RWQCB, and USACE). Through coordination with the USAC, Aspen prepared the NEPA EA for Corps 404 permit process, and reviewed and coordinated revisions to the 1602 with CDFG.

Los Angeles Unified School District (LAUSD), Los Angeles County, CA. Deputy Program manager and Technical writer for several CEQA documents (EIRs and IS/MNDs) being prepared as part of Aspen's ongoing services contract with the LAUSD to help approve school projects that would meet existing overcrowded conditions in the greater Los Angeles area. Projects have included:

- **New School Construction Program EIR.** Served as a Technical Specialist in charge of preparation of the social science issues, including Socioeconomics, Noise, Transportation/Traffic, and Alternatives analyses for this Program EIR being prepared for the LAUSD. The LAUSD 2020 Program would provide student

seats throughout the LAUSD via a combination of the addition of portable classrooms to existing campuses, modernization and reconfiguration of existing campuses, and the construction of new schools.

- **East Valley Middle School No. 2 EIR.** Served as a Technical Specialist for this middle school project proposed to be located at the previous Van Nuys Drive-In site, preparing the Transportation/Traffic and Noise analyses. The EIR focused on impacts associated with air quality, hazards and hazardous materials, noise, land use and planning, and traffic and transportation. Major issues of concern included traffic and noise generated by school operation activities. The EIR included LAUSD design standards and measures employed to minimize environmental impacts.
- **Mt. Washington Elementary School Multi-Purpose Room Addition Project IS/MND.** Served as the Technical Specialist in charge of preparation of the IS/MND for the development of a multi-purpose room facility, including a library, auditorium, and theater, to the existing Mt. Washington Elementary School campus located in Los Angeles. The surrounding residential community had concerns regarding the proposed project's impacts on aesthetics, traffic, air quality, and noise. Of particular concern, was impacts generated due to the after-hours use of the multi-purpose room facility by civic and community groups.
- **Canoga Park New Elementary School IS/MND.** Served as Served as the Technical Specialist in charge of preparation of the IS/MND for this elementary school project proposed to be developed on a parcel of land owned by the non-profit organization, New Economics For Women (NEW). This "turn-key" project consisted of a Charter Elementary School to be developed by NEW and sold to the LAUSD for operation. It was later decided that NEW would lease the school back and run it as a charter school. Issues of concern included, pedestrian safety, traffic, air quality, noise, and land use.
- **Hughes Magnet Span School IS/MND.** Served as the Technical Specialist in charge of preparation of the Socioeconomics, Hydrology, Public Services and Utilities, and Recreational analyses for the proposed re-opening of the existing Hughes Middle School as a Magnet Span School serving up to 1,620 District 6th though 12th grade students. The re-opening of the Hughes Middle School would require the relocation of the existing uses of the campus. The existing Enadia Way Elementary School and Platt Ranch Elementary School would be re-opened for the relocation of these uses.
- **Wonderland Elementary School Portable Classroom Additions IS/MND.** Served as the Technical Specialist in charge of preparation of the IS/MND for a proposed addition to the Wonderland Avenue Elementary School, located in the City of Los Angeles.
- **Pio Pico Elementary School Playground Expansion IS/MND**. Technical Specialist in charge of preparation of the Notice of Preparation, Initial Study, and Administrative Draft EIR for the expansion of a playground at the existing Pio Pico School in the LAUSD. The playground was proposed on five residential properties. One of the residences is a potentially significant historical resource because of its association with an African-American woman journalist, Fay M. Jackson. This project was cancelled by the LAUSD after completion of the administrative draft report.
- **Fairfax Senior High School Portable Classroom Addition IS/MND**. Served as Technical Specialist in charge of preparation of the IS/MND for the addition of portable classrooms at the school. Major issue areas covered were noise, hydrology, and geotechnical analysis.
- **Polytechnic Senior High School Portable Classroom Addition IS/MND**. Served Technical Specialist in charge of preparation of the IS/MND for the addition of portable classrooms at the school. Major issue areas covered were noise, hydrology, and geotechnical analysis.
- **Washington Senior High School Portable Classroom Addition IS/MND**. Technical Specialist in charge of preparation of the IS/MND for the addition of portable classrooms at the school. Major issue areas covered were noise, hydrology, and geotechnical analysis.

EIP Associates 1998 to 2001

MTA Mid Cities/Westside Transit Corridor Study EIS/EIR. Was a key Technical Specialist in charge of preparation of the EIS/EIR for this 3-phase (including prepared the Major Investment Study (MIS), the Environmental Impact Statement (EIS), and an evaluation of the urban design implications of transit interventions on selected routes) study intended to address current and long range traffic congestion in the central and westside areas of the Los Angeles Basin. Three east/west corridors and a range of transit

alternatives ranging including Rapid Bus, light rail, and heavy rail are being evaluated. In addition to preparing several issue area chapters of this comprehensive joint EIS/EIR, Mr. Debauche assisted with the Environmental Justice analysis, the Section 4(f) Parklands discussion, Transportation/Traffic, and the Land Use sections of the EIS/EIR.

Wes Thompson Ranch Development Project EIR. Served as Technical Specialist for this hillside residential development in the City of Santa Clarita. Issues of concern included seismic and air quality impacts associated with the excavation of 2 million cubic yards of soil, the project's non-compliance with the City's hillside ordinance for innovative design, and traffic generated by project-related population growth in the area. Four different site configuration alternatives were developed as part of the EIR analysis. Other issues of concern included sensitive biological resources, the potential for hydrological impacts due to disturbance of the hillside, and cultural resources. As the technical writer for socioeconomics, noise, hazardous materials, air quality, and public services, Mr. Debauche conducted the Transportation/Traffic and Alternatives analyses.

City of Santa Monica Environmental Assessments. Was key Technical Specialist in charge of preparation of several environmental assessment documents for housing, commercial, institutional, and mixed-use developments in compliance with CEQA. As the technical writer for socioeconomics, noise, hazardous materials, air quality, and public services, Mr. Debauche conducted the Transportation/Traffic, Noise, and Alternatives analyses for:

- **Seaview Court Condominiums IS/MND.** This comprehensive Initial Study/Mitigated Negative Declaration included six technical reports including traffic, cultural resources, parking survey, shade and shadow analysis, and a geotechnical assessment to evaluate the level of severity of this development in the waterfront area of Santa Monica. Major issues of concern were; parking and project-generated traffic on adjacent narrow residential streets; visual obstruction and shading impacts of the proposed structure; liquefaction and seismic impacts to adjacent properties as result of the project's excavation for a subterranean parking garage; and the potential impacts of the project to impact the integrity of a historic district and the historic Seaview Walkway to the beachfront.
- **Four-Story Hotel IS/MND.** A comprehensive Initial Study/Mitigated Negative Declaration was prepared for this four-story hotel adjacent to St. John's Hospital in Santa Monica. Major issues of concern included project-generated traffic on surrounding multi-family residential uses and emergency access to the hospital.
- **Santa Monica College Parking Structure B Replacement EIR.** This focused EIR addressed issues related to traffic and neighborhood land use impacts associated with the addition of a 3-story parking structure in the center of the SMC campus. Major issues of concern included the potential for project-generated traffic to cause congestion at the school's main entrance on Pico Boulevard, and the potential for overflow traffic to impact the Sunset Community of single-family homes adjacent to the school.
- **North Main St. Mixed-Use Development Project EIR**. This EIR included evaluation of impacts resulting from the development of a mixed-use development in Santa Monica's "Commercial Corridor" on Main Street, with ground-floor residences and boutique commercial uses. Major issues of concern included traffic and parking impacts to Main Street and surrounding residential land uses, shade and shadow impacts, and neighborhood impacts.

Specific Plans and Redevelopment Projects. As Technical Specialist for Transportation/Traffic, Socioeconomics, Noise, Hazardous Materials, Air Quality, and Public Services/Utilities, Mr. Debauche conducted analyses and prepared these environmental sections for:

- **Cabrillo Plaza Specific Plan EIR in Santa Barbara.** This project consisted a mixed-use commercial development on Santa Barbara's waterfront on Cabrillo Boulevard. On-site uses included an aquarium, specialty retail, restaurants, and office space.
- **Culver City Redevelopment Plan and Merger EIR.** This programmatic EIR evaluated the impacts of the City's redevelopment of its redevelopment zones. A major land use survey and calculation of acreage of redevelopment lands was conducted as part of the EIR.

- **Dana Point Headlands Specific Plan EIR.** This EIR evaluated the development of coastal bluff in the City with hotel, single- and multi-family residential, and commercial uses. Major issues of concern included ground disturbance as a result of excavation, impacts to terrestrial and wildlife biology, recreation impacts to beachgoers, and project-generate population inducement.
- **Triangle Gateway Redevelopment Project EIR in Beverly Hills, CA.** This EIR evaluated the development of a supermarket, retail shops, and office space in the triangle gateway portion of downtown Beverly Hills. Issues of concern evaluated by Mr. Debauche included traffic, land use, and impacts to on-site historic structures.
- **UCLA Campus Housing Expansion.** This EIR evaluated the development and expansion of campus housing within the UCLA campus. Issues of concern evaluated by Mr. Debauche included hazardous materials and population/housing.

CH2M Hill - Minneapolis, MN **1995 to 1998**

- **Minneapolis/St. Paul International Airport Expansion EIS:** Mr. Debauche was a key writer of the EIS for this $4 million technical and environmental study, including the preparation of an Environmental Impact Statement (EIS), and an evaluation of the urban design implications of a proposed $800 million expansion of the existing MSP International airport, including transit and terminal modifications and the inclusion of a new perpendicular runaway. The studies included alternatives to the project and the long-term effects on the cities of Minneapolis and St. Paul. In addition to preparing several issue area chapters of this comprehensive EIS, Mr. Debauche assisted with the Environmental Justice Analysis (per Executive Order 12898), the Section 4(f) Parklands discussion, and the socioeconomics sections of the EIS. In addition, Mr. Debauche assisted with preparation of a technical report on airport noise effects on nearby housing and mitigation programs for the impacts of the proposed runway.
- **Minneapolis/St. Paul Wastewater Treatment Facility Expansion EIS:** Was a key writer of the EIS for expansion of the existing wastewater treatment facility serving the twin cities area. The studies included alternatives to the project and the long-term effects on the cities of Minneapolis and St. Paul. Mr. Debauche prepared several issue area chapters of this comprehensive EIS, including the Environmental Justice Analysis (per Executive Order 12898), and the socioeconomics sections of the EIS.

PROFESSIONAL ASSOCIATIONS

- American Planning Association (APA), Chapter Member

DECLARATION OF
Suzanne L. Phinney, D.Env.

I, Suzanne L. Phinney, declare as follows:

1. I am presently employed by Aspen Environmental Group, consultant to the California Energy Commission's Facilities Siting Office of the Systems Assessments and Facilities Siting Division as a Senior Associate.

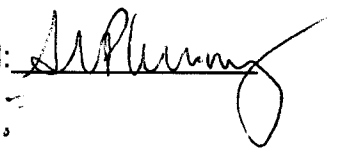
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare staff testimony on **TSE Appendix A** in the **Genesis RSA Supplement** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony and errata is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and errata and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 6/29/2010 Signed: 

At: Sacramento, California

SUZANNE L. PHINNEY

Senior Associate, Energy and Infrastructure

ACADEMIC BACKGROUND

Doctorate, Environmental Science & Engineering (D.Env.), University of California, Los Angeles, 1981
M.S., Marine Biology, Dalhousie University, Halifax, Nova Scotia, Canada, 1975
B.A., Biological Sciences, University of California, Berkeley, 1973

PROFESSIONAL EXPERIENCE

Dr. Phinney has 30 years of experience in the environmental and energy field, providing technical and policy support in energy analysis, environmental assessment, environmental remediation, air and water quality assessments, risk assessment, regulatory compliance, permitting, and project/program management. Her particular emphasis is energy and infrastructure with projects addressing climate change, alternative energy generation technologies, liquefied natural gas, petroleum infrastructure, advanced transportation vehicles and fuels, land use and energy, and power plant siting. Prior to employment at Aspen, Dr. Phinney worked for 16 years with Aerojet, where she oversaw all environmental and safety issues.

Aspen Environmental Group — 2001 to present

Dr. Phinney manages energy and infrastructure projects for Aspen and provides environmental support on major projects. She has provided energy and environmental expertise to the following clients:

California Energy Commission (CEC). Dr. Phinney has supported CEC staff since 2001. She has prepared analyses for several power plants throughout the State, and has authored or contributed to over a dozen special studies. She is currently Deputy Program Manager for planning studies conducted by the Aspen team. Her major efforts for the CEC include the following.

- **Power Plant Siting, CEC, Project Management/Technical Support (2001 – Present).** Dr. Phinney prepared the alternatives analysis for the following power plants under review by the Energy Commission:
  - **Palomar Energy Project –** 500 MW combined-cycle natural gas facility in Escondido, San Diego County
  - **Russell City Energy Center –** 600 MW combined-cycle natural gas facility in Hayward, Alameda County
  - **Eastshore Energy Center -** 115.5 MW simple-cycle natural gas facility in Hayward, Alameda County
  - **Carrizo Energy Solar Farm –** 177 MW solar thermal (Compact Linear Fresnel Reflector) plant in the Carrizo Plain, San Luis Obispo County
  - **CPV Sentinel Energy Project –** 850 MW natural gas plant in the Coachella Valley, Riverside County
  - **Marsh Landing Generating Station-** 930 MW natural gas plant within the existing Contra Costa Power Plant in Antioch, Contra Costa County
  - **Orange Grove Project –** 96 MW natural-gas peaking facility near Pala, San Diego County
  - **Willow Pass Generating Station –** 550 MW natural gas plant within the existing Pittsburg Power Plant in Pittsburg, Contra Costa County

- **Almond 2 Peaking Power Plant Project** – 174 MW natural-gas peaking facility near Ceres, Stanislaus County
- **Abengoa Mojave Solar Project** – 250 MW solar thermal (parabolic trough) plant near Harper Dry Lake, San Bernardino County
- **Ridgecrest Solar Power Project** – 250 MW solar thermal (parabolic trough) plant on 3,920 acres of BLM land near Ridgecrest, Kern County

Dr. Phinney prepared the waste management assessments of power plant licensing applications:

- **Eastshore Energy Center –** 115.5 MW natural gas simple-cycle plant in Hayward, Alameda County
- **Carrizo Energy Solar Farm –** 177 MW solar thermal (Compact Linear Fresnel Reflector) plant in the Carrizo Plain, San Luis Obispo County
- **Palmdale Hybrid Power Project –** 570 MW natural gas-solar thermal (parabolic trough) hybrid plant in Palmdale, Los Angeles County
- **SES Solar Two Siting Case –** 750 MW solar thermal (Stirling dish) plant on 6,500 acres of mostly BLM land in Imperial County
- **Hanford Energy Park Peaker Plant –** 120 MW simple-cycle, natural gas facility in Hanford, Kings County
- **Ridgecrest Solar Power Project** – 250 MW solar thermal (parabolic trough) plant on 3,920 acres of BLM land near Ridgecrest, Kern County
- **Blythe Solar Power Project** – 1,000 MW solar thermal (parabolic trough) plant on 9,400 acres of BLM land near Blythe, Riverside County
- **Palen Solar Power Project** – 500 MW solar thermal (parabolic trough) plant on 5,200 acres of BLM land in the Chuckwalla Valley, Riverside County

Dr. Phinney also coordinated the study of cooling water alternatives for the Tesla and Tracy natural gas, combined-cycle power plants.

- **Environmental Performance Report, CEC, Project Manager/Technical Support (2001, 2003, 2005)**.Dr. Phinney was Project Manager for Aspen's technical contributions, graphics and production efforts for the 2001 Environmental Performance Report (EPR) which detailed the current and historical air, water and biological impacts from in-state generation facilities. She provided support to the water resources discussion in the 2003 EPR and managed the analysis of out-of-state generation facilities for the 2005 EPR.
- **Advanced Electric Generation Technologies, CEC, Project Manager (2001 - 2002).** Dr. Phinney served as Project Manager for a report defining the technical development, developmental capacity, commercial status, costs and deployment constraints of selected alternative electric generation technologies. Technologies included geothermal, fuel cell, solar thermal, solar photovoltaic, wind and hydro. The focus was on development and application of the technology in California. Two page fact sheets on each technology and a matrix comparing all technologies was developed. Finally, an updated discussion of renewable technologies was developed for insertion into the alternatives section of Staff Assessments for power plant applications.
- **Liquefied Natural Gas Support, CEC, Technical Author (2002 – 2007**). Dr. Phinney has been instrumental in the preparation of numerous safety and policy reports on liquefied natural gas (LNG). She authored the Commission document: *International and National Efforts to Address the Safety and Security of Importing Liquefied Natural Gas: A Compendium*. This report reviewed national and international LNG regulations, standards and guidelines, reviewed risk assessment techniques, and identified, compiled and reviewed LNG safety/risk studies. Dr. Phinney helped organize LNG Access Workshops held in June 2005 and prepared a 40 page summary of presentations made at the workshops. She developed over 30 fact sheets on LNG subject areas for distribution to the public. Dr. Phinney compiled state and local comments on a proposed LNG terminal at the Port of Long Beach;

these were presented in the *Safety Advisory Report on the Proposed Sound Energy Solutions Natural Gas Terminal at the Port of Long Beach, California,* which was delivered to the Federal Energy Regulatory Commission within the mandated 30-day period imposed by the 2005 federal Energy Bill. She provided technical review for the report *The Outlook for Global Trade in Liquefied Natural Projections to the year 2020.*

- **Natural Gas Market Assessment Support, CEC, Technical Author/Editorial Support (2005 –** 2007). Dr. Phinne**y c**ontributed to natural gas supply and demand analyses for the Commission document, *Natural Gas Assessment Update*. She provided technical and editorial support to the 2005 and 2007 Integrated Energy Policy Report (IEPR) documents, *Preliminary (and subsequently the Revised report) Reference Case in Support of the 2005 Natural Gas Market Assessment* and *2007 Natural Gas Market Assessment.* She edited the Commission document *Natural Gas Quality: Power Turbine Performance During Heat Content Surges.*

- **Petroleum Infrastructure Environmental Performance Report, CEC, Project Manager (2005)**. Dr. Phinney served as Project Manager for the 2005 IEPR document *Petroleum Infrastructure Environmental Performance Report.* In addition to managing preparation of the report and workshop presentations, she prepared responses to comments and provided policy recommendations.

- **Hydropower and Global Climate Change, CEC, Technical Author (2005)**. Dr. Phinney coauthored the document *Potential Changes in Hydropower Production from Global Climate Change in California and the Western United States*. This report investigated the effects of climate change on hydropower production in the West and compared impacts and policy actions in California, the Pacific Northwest, and the Southwest.

- **Advanced Energy Pathways, CEC, Project Manager (2006 – 2008).** Dr. Phinney provided project management support for a 3-year study evaluating the effects of advanced transportation technologies and fuels (out to 2050) on California's natural gas and electricity systems. This report involved the development of baseline and alternative energy demand and supply scenarios, in-depth technical analysis of advanced transportation technologies and fuels, and the development of an energy-rich model.

- **Land Use and Energy, CEC, Project Manager/Technical Author (2006 – 2008).** Dr. Phinney authored a CEC report on the linkages between land use and energy, which ultimately became one of the two chapters presented in the 2006 IEPR Update. The report highlighted how energy can be better integrated in land use planning, and how efforts such as smart growth can help the state meet its energy and greenhouse gas emission reduction goals. She organized a full-day workshop involving over a dozen speakers representing state agencies, local governments, research entities, environmental groups, utilities, and non-profits. Dr. Phinney was one of the authors of the 2007 land use and energy follow-up report which further defined the role of land use in meeting California's energy and climate change goals. She helped synthesize the report into a chapter for the 2007 IEPR. Dr. Phinney helped edit the Land Use Subgroup of the Climate Action Team report prepared for submission to the California Air Resources Board AB 32 Scoping Plan.

- **AB 1632 Nuclear Power Plant Assessment, CEC, Technical Author (2007 – 2008).** Dr. Phinney was a key member of a team evaluating nuclear power issues in the state in response to AB 1632 legislation. She managed and prepared report sections regarding the impacts to local communities and the environmental issues and costs associated with alternatives, including renewables, to the state's two nuclear facilities. These sections were incorporated in the report *An Assessment of California's Nuclear Power Plants.*

- **Environmental Screening Tool for Out-of-State Renewable Energy Facilities, CEC, Project Manager (2009).** Dr. Phinney prepared an environmental screening tool/analysis allowing CEC to determine quickly whether out-of-state renewable facilities requesting RPS certification met California laws, ordinances, regulations and standards.

- **Energy Aware Facility Planning and Siting Guide, CEC, Project Manager (2009-2010).** Dr. Phinney is updating a 1997 version of the Energy Aware Guide to help local governments plan for and permit electricity generation facilities and transmission lines that will be needed in the upcoming years. The Guide informs planners, decision makers and the public about what, how, and why electricity infrastructure may be developed.

California Public Utilities Commission. Dr. Phinney has managed several environmental assessments for the CPUC and has been heavily involved in editorial support of many other CPUC documents prepared by Aspen.

- **Looking Glass Network Initial Study/Mitigated Negative Declaration, CPUC, Project Manager (2002 – 2003).** Dr. Phinney served as Project Manager for the preparation of Initial Study/Mitigated Negative Declarations (IS/MND) for this telecommunication project that involved construction in the San Francisco Bay Area and the Los Angeles Basin to allow fiber optic connections in numerous locations.
- **Williams Communications Sentry Marysville Project IS/MND, CPUC, Project Manager (2002 – 2003).** Dr. Phinney served as Project Manager for the installation of fiber optic connection to a Beale Air Force Base in Yuba County.
- **Kirby Hills II Natural Gas Storage Facility IS/MND, CPUC, Project Manager (2007).** Dr. Phinney managed an IS/MND for expansions at a natural gas storage facility in Solano County.
- **Multiple EIR Documents, CPUC, Technical Editor (2004 - 2008).** Dr. Phinney provided editorial and QA/QC review for the Diablo Canyon Steam Generator Replacement EIR, the Miguel Mission 230 kV Transmission Line EIR and the Sunrise Powerlink EIR/EIS.

California Institute of Technology/University of California. Dr. Phinney provided project management support to the following project.

- **Combined Array for Research in Millimeter-wave Astronomy EIS/EIR**, **U.S. Forest Service and the University of California (2001 – 2002).** Dr. Phinney was the Project Manager for this EIS/EIR for a radio telescope antenna array to be placed at a high altitude site in the Inyo National Forest. The evaluation of alternatives was especially contentious, and Aspen's field analyses of several potential sites were pivotal in the ultimate selection of one of these alternative sites.

Western Area Power Administration. Dr. Phinney provided editorial and QA/QC support to the following projects.

- **North Area ROW Maintenance Project Environmental Assessment, Western, Technical Editor/QA/QC (2006-2008).** Dr. Phinney provided technical editing and QA/QC support for all documents relating to the development of 800 miles of transmission lines in Northern California.
- **Sacramento Area Voltage Support Supplemental EIS/EA, Technical Editor/QA/QC (2006 – 2008).** Dr. Phinney provided technical editing and QA/QC support for all environmental documentation and permitting for new construction and reconstruction of transmission lines in the greater Sacramento area.

Vermont Yankee Nuclear Power Plant Report, Vermont Department of Public Service, Project Manager (December 2008 to January 2009). Dr. Phinney was the Project Manager and provided technical support for the environmental analysis of the continued operation of the Vermont Yankee Nuclear Power Station in Vernon, Vermont. The report assessed the environmental impacts to land, water and air resources (including climate change), soil and seismicity, on-site and off-site storage and disposal of high-level and low-level nuclear waste.

GenCorp 1999 to 2000

- As Vice President, Environmental and Regulatory Affairs, Dr. Phinney held primary responsibility for coordinating the company's aerospace and automotive environmental activities with various federal, State, and local regulatory agencies. Her specific responsibilities included: working with external groups and entities to develop responsible environmental legislation, regulations, and standards and the implementation of sound public policy; developing stakeholder base and strategy to ensure that company objectives were achieved; facilitating company and regulatory agency discussions to achieve more comprehensive and quicker remediation of sites; and spearheading a stakeholder group to develop and fund scientific studies on selected chemicals of concern.

Aerojet General Corporation 1984 to 1999

As Vice President, Environmental Health and Safety, Dr. Phinney ensured that programs were in place to meet all regulatory requirements and company initiatives. Her responsibilities included: providing strategic direction and management of all superfund-related investigation and remediation activities; developing environmental management plans; communicating environmental requirements, concerns, and successes to both internal and external audiences, including the board of directors, investment banking, and the analyst community; and participating as a member of the leadership council in defining company-wide business objectives and targets.

- Dr. Phinney created the first corporate EHS department, defining and staffing key functional areas. She managed a $20,000,000 annual budget and oversaw a staff of up to 30 professionals. Select accomplishments include: the development of remediation technologies that resulted in the cleanup of over 50 billion gallons of contaminated groundwater; development of the world's first groundwater treatment facility for perchlorate; significant reductions in emissions and hazardous waste generation; representation on numerous legislative and regulatory task forces and leadership positions on external business and community EHS committees and councils; and extensive public outreach efforts.

PREVIOUS EXPERIENCE, 1976 TO 1984

Jacobs Engineering Group. Dr. Phinney conducted toxicological, ecological, and air and water quality assessments.

Department of Environmental Science and Engineering at the University of California, **Los Angeles.** Dr. Phinney analyzed legal, economic, public health, and administrative barriers to waste water reuse. She also conducted an analysis of ecological and institutional factors in coastal siting of power plants.

Southwest Los Angeles Junior College. Dr. Phinney taught lecture and laboratory courses in general science.

TRAINING

- Certificate, Executive Program, University of California, Davis, 1989
- Expert Witness Training, California Energy Commission, 2001

HONORS AND AWARDS

- Who's Who of American Women, 18th Edition
- YWCA Outstanding Woman of the Year (Sciences) Award, 1992
- Woman of Achievement Award, Downtown Capitol Business and Professional Women, 1993
- Individual Award for Outstanding Contribution in Air Quality, 1995
- Sacramento Safety Center Incorporated, Eagle Award for Safety, 1998
- Regional Award for Outstanding Contribution in Air Quality, 2003

ACTIVITIES AND ASSOCIATIONS

- Editorial Board, The Environmental Professional, 1987-1989
- City of Sacramento Toxic Substances Commission, 1986-1988
- Sacramento Environmental Commission, 1988-1991
- Board of Directors, League of Women Voters of Sacramento, 1989-1999; President 1996-1997; Co-President 1997-1998; 2003-2005; Energy Study Committee 2005; Moderator/Facilitator of Debates and Forums (e.g., climate change, the SACOG's MTP, and flood control)
- Toxics Consultant, League of Women Voters of Sacramento, 1988-1989
- Member, Advisory Committee on AB 3777 (Risk Management Prevention Programs)
- Board of Directors, American Lung Association of Sacramento-Emigrant Trails, 1992-2000; President 1998-1999;
- Board of Directors, Sacramento Metropolitan Chamber of Commerce, 1992-1997; Vice President, Public Policy, 1996-1997
- Board of Directors, Air and Waste Management Association, 1991-1994
- Steering Committee Chair, Cleaner Air Partnership, 1993-1996, 2000-2001; Executive Committee 1993 to present
- Co-chair, TCE Issues Group, 1994-2000
- Sacramento Water Forum, 1995-2000
- Rate Advisory Committee, Sacramento Municipal Utility District, 1999-2001

SELECTED PUBLICATIONS/PRESENTATIONS

Phinney, S.L., Panel Moderator, Climate Change Initiatives for California, AEP Annual Conference, Shell Beach, California, 2007.

Phinney, S.L., Panel Moderator, Is there a Need for LNG in California, AEP Annual Conference, Shell beach, California, 2007.

Phinney, S.L., "LNG Safety Analysis in California – Federal, State and Local Processes" Presented at California Foundation on the Environment and the Economy, 2005.

Phinney, S.L., "Energy Basics" Presented at League of Women Voters of California Annual Convention, 2005.

Phinney, S.L., Presentation to U.S. Department of Justice, Office of the U.S. Attorney, on Women and Equality, 2004.

Phinney, S.L., "Trends in Industrial Waste Generation and Management" Presented at National Ground Water Association Conference, Las Vegas, Nevada, 1996.

Phinney, S.L., "Effective Management of an RI/FS to Reduce Financial Exposure," Manufacturers Alliance Environmental Management Council, Washington, D.C., 1995.

Phinney, S.L., "Knowing Your Compliance Challenge," 7th Annual California Statewide Community Awareness and Emergency Response (CAER) Conference, Sacramento, California, 1995.

Phinney, S.L., "Industry's Role in Broadening the Use of Alternative Fuels in America," Clean Cities Ceremony, Sacramento, California, 1994.

Phinney, S.L., "Aerospace Industry Perspective on Defense Conversion," AAAS Annual Meeting, San Francisco, California, 1994.

Phinney, S.L., "Aerojet's Waste Reduction Successes," Business for the Environment Conference, Sacramento, California, 1993.

Phinney, S.L., "Company Worker Trip Reduction Programs Under the Clean Air Act Amendments." MAPI Hazardous Materials Management Council, Washington, D.C., 1993.

Phinney, S.L., Testimony Before House Government Operations Subcommittee, 1993.

Phinney, S.L., Moderator, The Clean Air Act, A Public Forum, Sacramento, California, 1993.

Phinney, S.L., Plenary Session Chairperson and Speaker, "Business and the Environment: Must You Sacrifice One for the Other?" National Association of Environmental Professionals Conference, Seattle, Washington, 1992.

Phinney, S.L., "Facing the Challenge: The New California EPA." HazMat Northern California Conference, San Jose, California, 1992.

Phinney, S.L., "Understanding the Client Perspective." Environmental Business Conference, Pasadena, California, 1991.

Phinney, S.L., Panelist – Women of Science: Secrets of Success. Workshop, AAAS Annual Meeting, Washington, D.C., 1991.

Phinney, S.L., Keynote Address, ADPA International Symposium on Compatibility and Processing, San Diego, California, 1991.

Phinney, S.L., Keynote Address, Women in Science and Technology Conference, Jackson, Mississippi, 1991.

Phinney, S.L., Guest Speaker, Sacramento County Bar Association, Environmental Law Section, Sacramento, California, 1991.

Phinney, S.L., "Managing CERCLA Compliance from the Corporate Perspective." Hazardous Materials Management Conference/West, Long Beach, California, 1988.

Phinney, S.L., and C.A. Fegan, "Identifying a Feasible, Effective Treatment Method for an Unusual Chemical of Concern." Proceedings, American Defense Preparedness Association 16th Environmental Symposium, New Orleans, Louisiana, 1988.

Phinney, S.L., "A Proactive Superfund Cleanup by Industry." Proceedings of the 4th Annual Hazardous Materials Management Conference/West, Long Beach, California, 1988.

Thompson, C.H., S.L. Phinney and F.R. McLaren, "Aerojet: A Regional Site Program – Problem Definition." Proceedings of the Hazardous Waste and Environmental Emergencies Conference, Cincinnati, Ohio, 1985.

Kahane S.W., S.L. Phinney and A. Wright, "The Tightening Environmental Regulatory Climate for Hazardous Waste Management – Current Mandates and Future Directions for Industrial Compliance." Proceedings of the 1984 AlChE Summer National Meeting, Philadelphia, Pennsylvania, 1984.

Bachrach, A., D.M. Morycz, S.L. Phinney and S.W. Kahane, "Regulation and Offshore Oil and Gas Facilities." In: Emerging Energy/Environmental Trends and the Engineer. Eds. R.D. Nuefeld and R.W. Goodwins, 1983.

Lindberg, R.G., S.L. Phinney, J. Daniels and J. Hastings (eds)., "Environmental Assessment of the U.S. Department of Energy's Solar Thermal Technology Program." Prepared for the U.S. Department of Energy, June 1982.

Kahane, S.W., S.L. Phinney, J.A. Hill and R.C. Sklarew, "Key Considerations in Assessing the Air Impacts of Projected Outer Continental Shelf Oil and Gas Development," presented at the 74th Annual Air Pollution Control Association Meeting, Philadelphia, Pennsylvania, 1981

Phinney, S.L., "The U.S. Environmental Protection Agency's Pesticide Registration Program: A Case Study – Chloramben." Doctoral Dissertation, Environmental Science and Engineering Program, University of California, Los Angeles, California, 1981.

Phinney, S.L., (contributing author) et al. "Institutional Barriers to Wastewater Reuse in Southern California." Environmental Science and Engineering Report Prepared for the Office of Water Research and Technology, U.S. Department of the Interior, 1979.

Phinney, S.L., "Area-Restricted Feeding in American Plaice." Masters Thesis. Dalhousie University, Halifax, Nova Scotia, Canada, 1975.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
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1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION FOR THE *GENESIS SOLAR ENERGY PROJECT*

Docket No. 09-AFC-8

PROOF OF SERVICE
(Revised 6/7/10)

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DECLARATION OF SERVICE

I, Maria Santourdjian declare that on July 2, 2010, I served and filed copies of the attached Revised Staff Assessment Supplement for Genesis Solar Energy Project (09-AFC-8). The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: [http://ww.energy.ca.gov/sitingcases/genesis_solar].

The documents have been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(*Check all that Apply*)

FOR SERVICE TO ALL OTHER PARTIES:

__x__ sent electronically to all email addresses on the Proof of Service list;

__x__ by personal delivery;

__x__ by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses NOT marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

__x__ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);

OR

____ depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 09-AFC-8
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

Originally Signed by
Maria Santourdjian

*indicates change